5630

5630 1936
Archives QH 76.5.S6 U5 pt. 1
United States. National Park Service.
Southwestern Monuments; monthly reports

1936
Archives QH 76.5.S6 U5 pt. 1
United States. National Park Service.
Southwestern Monuments; monthly reports
5630

RULES

1. Books may be retained for a reasonable length of time provided there are no other requests for them.
2. Return books promptly to the Headquarters Loan Library when you have finished with them.
3. This book is government property and should be cared for accordingly. You are responsible for it while it is charged out to you.

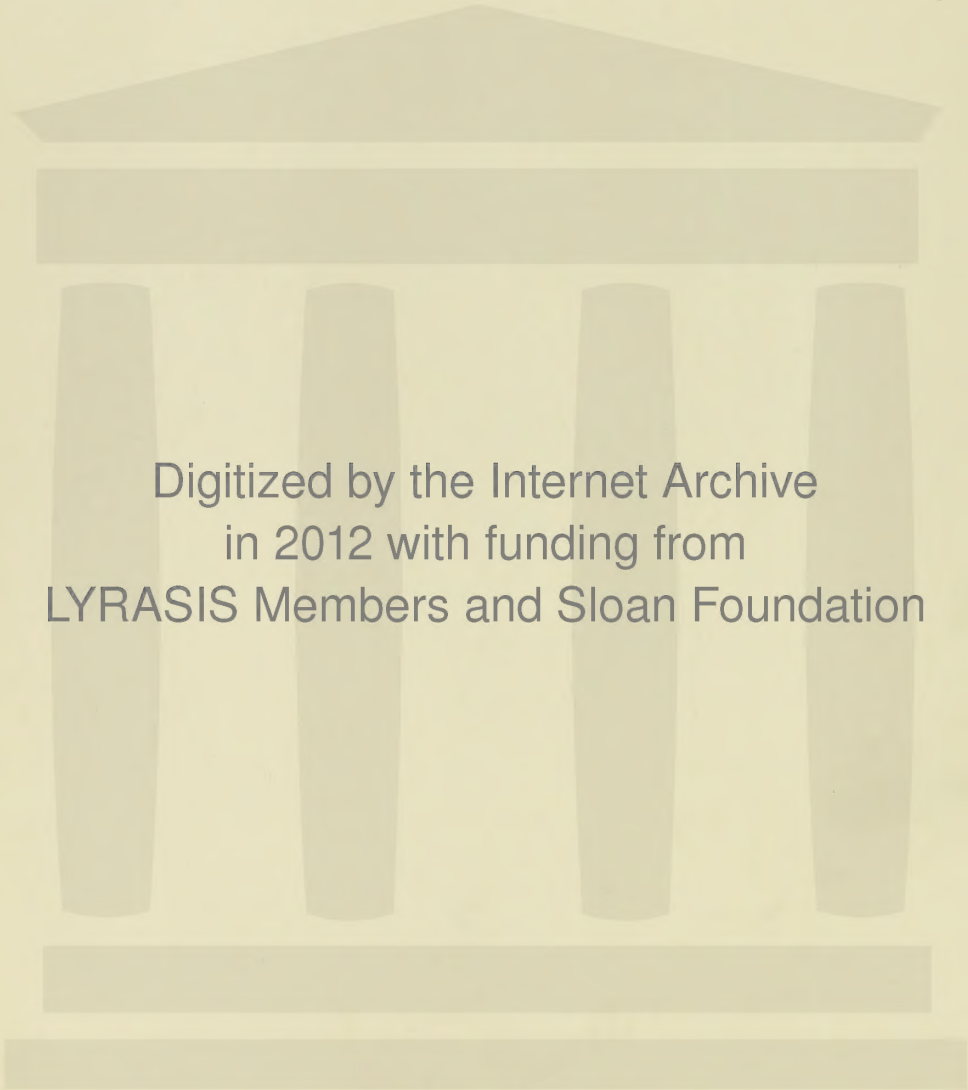
Arizona Archeological Center Library
04/4/66

NATIONAL PARK SERVICE
SOUTHWESTERN MONUMENTS
LIBRARY
FILE NO. 917.8

Western Archeological and
Conservation Center Library

NATIONAL PARK SERVICE
LOAN LIBRARY
BOX 1562, GILA PUEBLO
GLOBE, ARIZONA

CATALOG NO._____


Digitized by the Internet Archive
in 2012 with funding from
LYRASIS Members and Sloan Foundation

http://archive.org/details/southwesternmonu1936depa

SOUTHWESTERN MONUMENTS

MONTHLY REPORT

JANUARY, 1936



DEPARTMENT OF THE INTERIOR

NATIONAL PARK

SERVICE

Arizona Archeological Center Library

FILE NO. 917.8

SOUTHWESTERN MONUMENTS
JANUARY, 1936, REPORT
INDEX

CONDENSED GENERAL REPORT

Travel----------1
Administrative----------2
Maintenance, Improvements, New Construction----------2
Activities of Other Agencies in Monuments----------3
Flora, Fauna, Natural Phenomena--3
Use of Mon't Facilities by Public4
Protection----------4
Miscellaneous----------4

REPORTS FROM THE MEN IN THE FIELD

Aztec Ruins----------27
Bandelier---------- 6
Bandelier ECW Report----------35
Bandelier Forestry Report-------31
Canyon de Chelly----------12
Capulin Mountain----------31
Casa Grande----------16
Chaco Canyon----------25
Chiricahua----------30
Chiricahua ECW Report----------30
Chiricahua Geology Report-------29
Closing----------40-6
El Morro---------- 5
Gran Quivira----------10
Montezuma Castle----------32
Natural Bridges----------34
Pipe Spring----------33
Saguaro----------18
Sunset Crater----------24
Tonto----------24
Tumacacori----------19
Walnut Canyon----------11
White Sands----------14
Wupatki----------20

HEADQUARTERS STUFF

Branch of Education---------- 35
Bird Banding Totals----------40-2
January Educational Contacts--40-4
Branch of Engineering---------40-6

THE SUPPLEMENT

Report on Mission San Jose de Tumacacori, By J. H. Tovrea----------41
Peyote Notes, by Fred Gibson----------54
How to Tell the Tree Ring Story, by Custodian Earl Jackson----------55
Visitor Impressions, by Drs. Dorothy and John Keur----------56
Comments on Ranger Guide Service at Casa Grande National Monument, by Junior Naturalist Dale S. King----------60
Bandelier Birds, by H.C.W.P. Betty Jackson----------74
Educational Contact Statistics, by Park Naturalist Robert Rose---------75
Ruminations, by the Boss----------79

SOUTHWESTERN MONUMENTS
PERSONNEL

HEADQUARTERS, Southwestern Monuments, Coolidge, Arizona: Frank Pinkley, Superintendent. Hugh M. Miller, Acting Assistant Superintendent. John H. Diehl, Associate Engineer. Robert H. Rose, Assistant Park Naturalist. Dale S. King and Louis R. Caywood, Junior Park Naturalists. A. T. Bicknell, Custodian on Special Detail. Robert L. Cole, ECW Clerk. Luis Gastellum, Temporary Clerk-Stenographer.

GENERAL FIELD MEN: Charles A. Richey and Harry Langley, Resident Landscape Architects. J. B. Hamilton, Associate Engineer. J. H. Tovrea, Chief Engineering Aide. Andrew Clark, Topographer. Carl Schmidt, Rodman.

FIELD STATIONS:

1. Arches---Moab, Utah. J. M. Turnbow, Custodian.
2. Aztec Ruins---Aztec, New Mexico. Johnwill Faris, Custodian. Robert W. Hart, Ranger-Archeologist.
3. Bandelier---Box 669, Santa Fe, New Mexico. Earl Jackson, Custodian.
4. Canyon de Chelly---Chin Lee, Arizona. Robert R. Budlong, Custodian.
5. Capulin Mountain---Capulin, New Mexico. Homer J. Farr, Custodian.
6. Casa Grande Ruins---Coolidge, Arizona. W. J. Winter, Custodian. Charlie R. Steen, Park Ranger.
7. Chaco Canyon---Crownpoint, New Mexico. Thomas C. Miller, Custodian.
8. Chiricahua---Willcox, Arizona.
9. El Morro---Ramah, New Mexico. E. Z. Vogt, Custodian.
10. Gila Cliff Dwellings---Cliff, New Mexico. No Custodian.
11. Gran Quivira---Gran Quivira, New Mexico. W. H. Smith, Custodian.
12. Hovenweep---Cortez, Colorado. No Custodian.
13. Montezuma Castle---Camp Verde, Arizona. Martin L. Jackson, Custodian. Frank Fish, Park Ranger.
14. Natural Bridges---Blanding, Utah. Zeke Johnson, Custodian.
15. Navajo---Kayenta, Arizona. John Wetherill, Custodian.
16. Pipe Spring---Moccasin, Arizona. Leonard Heaton, Acting Custodian
17. Rainbow Bridge---Rainbow Lodge, Arizona. No Custodian.
18. Saguaro---Tucson, Arizona. Paul Beaubien, Temporary Ranger.
19. Sunset Crater---Flagstaff, Arizona. J. W. Brewer, In Charge.
20. Tonto---Roosevelt, Arizona. Woodrow Spires, In Charge.
21. Tumacacori---Box 2225, Tucson, Arizona. George Boundey, Custodian. Martin Evenstad, Park Ranger.
22. Walnut Canyon---Flagstaff, Arizona. Donald Erskine, Ranger In Charge.
23. White Sands---Alamogordo, New Mexico. Tom Charles, Custodian. Barry Mohun, Utility Man.
24. Wupatki---Flagstaff, Arizona. J. W. Brewer, In Charge.
25. Yucca House---Cortez, Colorado. No Custodian.

CONDENSED REPORT

Coolidge, Arizona
February 1, 1936

The Director
National Park Service
Washington, D. C.

Dear Mr. Director:

The Condensed Report for Southwestern Monuments for January, 1936:

TRAVEL

	January, 1936	January, 1935	January, 1934
Aztec Ruins	225	298	131
Bandelier	254	233	72
Capulin Mountain	350	300	400
Casa Grande	3,370	2,327	2,272
Chaco Canyon	260	361	300
Canyon de Chelly	10	9	---
Chiricahua	250	---	---
El Morro	4	0	---
Gran Quivira	287	---	370
Montezuma Castle	612	321	960
Natural Bridges	---	---	---
Navajo	---	---	---
Pipe Spring	307	148	454
Saguaro	800	---	---
Sunset Crater	80	---	---
Tonto	751	425	---
Tumacacori	1,607	888	1,498
Walnut Canyon	285	---	---
White Sands	4,402	---	---
Wupatki	106	60	34
Yucca House	---	---	---
Actual Reported Registration	13,960	5,370	6,491

The 12 monuments which reported both in 1935 and 1936 showed an increase from 5,370 to 7,856---2,486 visitors, or 46.2 percent.

The ten monuments which reported both in 1934 and 1936 showed an increase from 6,491 to 7,378---887 visitors, or 13.6 percent.

Thus, it would appear that January, 1936, as a travel month was 46.2 percent better than the same month in 1935; 13.6 percent better than the same month in 1934. General heavy increase in travel is shown all through the Southwest, particularly in the southern part of the area. This is notable, because some monuments reported increases despite adverse weather conditions.

GENERAL

020 WEATHER

January throughout the Southwest has been colder than the same month last year with the singular exception of a warm area apparently surrounding the San Francisco Peaks, including Walnut Canyon and Wupatki Monuments. Northeastern New Mexico also experienced weather slightly warmer than the rest of the Southwest. Excellent moisture conditions brought about by good snows are found at Gran Quivira, El Morro, and Bandelier. The southern part of our area is still suffering from lack of moisture.

100 ADMINISTRATIVE

121 MONUMENT INSPECTIONS BY SUPERINTENDENT PINKLEY

Superintendent Pinkley made a one-day trip to Tumacacori to re-check certain architectural data in the light of recent investigations.

122 INSPECTIONS BY SPECIAL FIELD REPRESENTATIVES

Lyle Barcume, associate landscape architect at Bandelier January4; at Canyon de Chelly several times during month.

Associate Engineer J. B. Hamilton and Chief Engineering Aide Paul Duvic at Canyon de Chelly January 3.

Regional Wildlife Technician Adrey Borell at White Sands and Tumacacori.

Associate Engineer J. H. Diehl at White Sands.

Landscape Architect A. C. Kuehl and Superintendent Guy Edwards (Grand Teton National Park) at Pipe Spring.

123 INSPECTIONS BY NATIONAL PARK OFFICERS

Acting Assistant Superintendent Hugh Miller at Chiricahua Jan. 21-24.

180 PUBLICITY

The White Sands National Monument float, donated by public-spirited citizens of Alamogordo, New Mexico, won first prize in its division at the El Paso (Texas) Sun Bowl Carnival, January 1.

200 MAINTENANCE, IMPROVEMENTS, NEW CONSTRUCTION

210 MAINTENANCE, UNUSUAL

CASA GRANDE---Sewage disposal system still giving trouble and requiring maintenance with makeshift methods.

CAPULIN MOUNTAIN---road up the Crater in very bad condition. Is really unsafe, and needs maintenance.

220 IMPROVEMENTS

CHACO CANYON---minor museum improvements effected during month.

SAGUARO---Register stand built. Temporary ranger quarters being constructed with aid from the University of Arizona in the University storehouse on the monument.

WALNUT CANYON---Cistern cleaned and now in first-class shape.

230 NEW CONSTRUCTION

AZTEC RUINS---ECW work progressing with sheds torn down, patio work almost completed, and cleanup under way.

BANDELIER---CCC barracks moved and Museum Building footings completed and walls are at three-foot height. Residence road drainage structure complete as far as grading is concerned. Telephone conduit trench completed. Tree and shrub planting carried on all month. Water line excavation to 10,000 gallon reservoir completed and reservoir about

75 percent excavated. All materials on job for this project.
Timber crew in Santa Fe National Forest has delivered all vigas and lintels for Museum and Quarters No. 1 buildings.
The quarry crew had worked steadily producing building stone for the museum, quarters and other building projects.
A small crew has been working on carved signs for the monument and has recently started supplying signs for other southwestern monuments.
CANYON DE CHELLY---Custodian's residence 90% complete
Well complete. 98 feet 5 inches deep; 6-5/8 inches (O.D.) diameter. Pumping 2,880 gallons per hour, the level remains constant at 41 feet. Fine cooperation from Indian Irrigation Service.
CHACO CANYON---Boundary fence complete except for minor cleanup. Custodian Miller reports excellent job by contractor despite hardships. 12,672 rods of fence, 18 gates, 2 cattleguards, 106.953 cubic yards of concrete.
CHIRICAHUA---ECW progress as follows:
1400 additional feet on Sara Deming Trail, making a total of 4,900 feet.
200 additional feet of heavy construction on Echo Trail.
1500 square yards of backsloping on Bonita Highway. About 2,000 cibic yards of material moved.
Headquarters Ranger station 75% complete.
Bath house 60% complete.
PIPE SPRING---ECW work as follows:
Ditch diversion 90% complete.
80% of rock laid for walk from west building to Fort.
Considerable road widening accomplished.

300 ACTIVITIES OF OTHER AGENCIES IN MONUMENTS

320 COOPERATING GOVERNMENT AGENCIES

CANYON DE CHELLY---Custodian Budlong deeply appreciates efficient cooperation of Indian Irrigation Service in well drilling. Especial thanks to Mr. C.A.Burns, engineer, and Mr. Burt Cravath, driller.
CHACO CANYON---Soil Conservation Service has been forced to lay off men for lack of funds to buy materials for large basket dams in revetment work. This work should proceed while ground is frozen and would result in much protection to important ruins.

400 FLORA, FAUNA, NATURAL PHENOMENA

430 ARCHEOLOGY, PREHISTORY, HISTORY

BANDELIER---Mrs. Betty Jackson discovered a six-room cliff dwelling, the only one known to occur on the shady side of Frijoles Canyon, one half mile above Ceremonial Cave.
---Excavation for a box culvert disclosed a fragmentary skeleton. No accompanying artifacts.
---Another bison tooth discovered. Previous one identified in 1934.
---Small six-room ruin uncovered by grading behind utility area. No damage, fortunately.
CHACO CANYON---"Prehistoric turkey nest" found 10 feet below surface

in arroyo near Pueblo III ruin. Eggs removed in block and placed in museum.

440 INSECT CONTROL

CASA GRANDE---Infestation of mesquite trees requiring examination by forester. More than 20 trees badly damaged.

460 BIRDS

BANDELIER---Merriam Turkeys unusually tame.

GENERAL---Total of 379 birds now banded by six stations.

WUPATKI---Turkeys still in high country, which is unusual. Flock of dozen introduced Scaled Quail noted at Heiser Spring.

470 ANIMALS

BANDELIER---Beaver have ascended into monument within half mile of camp. Cutting about 50% of young cottonwood growth.

WALNUT CANYON---Herd of 19 deer noted on monument.

WUPATKI---Deer reported as still in high country. Unusual.

500 USE OF MONUMENT FACILITIES BY PUBLIC (see travel figures on page 1)

530 NEWSWORTHY VISITORS

CASA GRANDE---January 9, Dr. W. H. Campbell of Desert Laboratory of Southwest Museum; Jan. 10, Arthur Snyder, state supervisor of vocational education; Jan. 17, W. Ross Teel, Indiana state archeologist; Jan. 20, Amos Alonzo Stagg, famous football coach; Jan. 24, W. L. Simpson, U. S. Commissioner in Grand Teton area, Wyoming.

TONTO---Amos Alonzo Stagg, January 19.

WHITE SANDS---Giovanni Bassett, editor of "Popolo d'Italia," Milan, Italy.

WUPATKI---Alexander Woollcott, noted author and critic, and Joe Hennessy, January 4-6, "to be somewhere where no one could call him up to say his maiden aunt had just been arrested for disorderly conduct."

600 PROTECTION

650 SIGNS

WALNUT CANYON---Reports need of better signs at entrances on Highway 66.

900 MISCELLANEOUS

MAIL COUNT

Incoming, official	1,307
Incoming, personal	759
Outgoing, official only	1,590
Telegrams, incoming	13
Telegrams, outgoing	23
Total number of pieces handled	3,692

Cordially,

Frank Pinkley, Supt.

REPORTS FROM MEN IN THE FIELD

EL MORRO

By Evon Z. Vogt, Jr.

Travel to El Morro is at a standstill. Visitors for the month number four, two from Gallup, one from the Gamerco coal mine, and myself. No one has been inside the monument grounds, except myself, since the 5th of the month. The entrance road leading from the main road into the monument is covered with two feet of hard crusted snow. A solitary rabbit path leads across the cattleguard. I made an attempt last Sunday to drive my car into the monument; after bucking the snow for 20 feet, I stuck in a snowdrift and spent an hour shoveling and backing out into the main road. Then I decided it would be better policy to leave the car in the road and plow through the snow on foot to the register.

After looking at a practically blank register, I waded through knee-deep snow around to the south side of the Rock where it is warm, sunny, and dry in most places.

If the administration building were to be built on the north side, it is clear that a snow plow would be needed to open the road for the ranger or custodian. Either that or he would have to find a nice warm cave and hibernate during the winter months.

There are about six inches of ice on the water in the cove. I was unable to remove the pipe which siphons the water down to the cabin before the water froze, because homesteaders insisted on hauling water all through December. The pipe is not being damaged and could not be removed without a great deal of chopping, so I think I shall leave it in the pool.

From the water cove one can see that the prehistoric hand and foot trail leading down from the top of the Rock to the water in the rincon could not have been used in the winter time. The snow clings to that side of the cliff and completely covers the old hand and foot holes. But, I guess, the pueblenos didn't need to come down for water when there was snow on top to melt. If they did come down to the rincon for water, it must have been quite a sight to see several old Indians dressed in deerskins and shivering around trying to keep warm chopping a hole in the ice with their stone axes.

El Morro is pretty this time of year. Three colors dominate the picture that is seen by the visitor. The snow, clouds, and rocks are more or less white. The green of the evergreen trees is quite dark and colorless compared to the dark blue of the distant Zuni Mountains and the beautiful blue of the New Mexican sky. Other colors which make up minor parts of the picture are the grays of the oak trees and sagebrush, the browns of the tree trunks, and the slight traces of red coloring nearby mesas.

But one can hardly appreciate this beauty when the snow oozes down inside overshoes and cools one's feet to a much lower degree than is comfortable and clouds gather for another storm which promises to cover the monument with another foot of snow.

After admiring the color of our new steps just after the application of the Copperas, I examined them two weeks later to find that some chemical reaction had taken place and the color was white, almost as if they had been whitewashed. They are still white. Although the color of the south slope of the Rock is quite light, it is far from white, and the steps do not blend into the natural sandstone at all.

****

BANDELIER

By Earl Jackson, Custodian

Visitors:

Visitors numbered 254, arriving in 76 cars, from 27 states, Washington, D. C., England, Australia, Manitoba, and Ontario.

The six highest states by visitors were: New Mexico, 160; Colorado, 15; Oklahoma, 13; Texas, 9; Kansas, 8; South Dakota, 6.

Visitor attendance, discounting 10 people who came from December 22-24, inclusive, shows an increase of 11 over January of 1935. This increase is in spite of bad weather conditions.

Visitor Trip Chart:

From the first of January, 19 trips with Park Service guide were taken through the ruins. These totalled 55 people. The others were all contacted and registered, but either didn't go through on account of weather, or went through with local guides or Harvey couriers, or went through unattended in my absence from the office. Many of those going through unattended are with local people who have seen the ruins so often they feel like they partially owned the place, and specifically prefer to wander informally about the canyon to going with a guide. The average of minutes devoted to each guided party was 54.7.

Weather and Roads:

Days partly cloudy:	8	
Days cloudy:	12	
Clear days:	11	
Maximum Temperature:	51	January 15
Minimum Temperature:	2	January 18
Mean Maximum:	37	
Mean Minimum:	14.8	
Precipitation:	.60	
Snowfall:	3"	January 7
"	4"	" 18.

In other words, weather has been brisk during January, with the heaviest snows since 1933. There has been a high percentage of cloudy days. Temperature has been only moderately low. Snow was 18" deep at a 1200-feet higher altitude, on Sawyer Mesa.

Roads have been bad, as is to be expected in January, but are better than they were at this season last year. They have been passable at all times, and tire chains were needed only for two days, on the steep grades of the Ramon Vigil Grant. The road to the highway is good now, with just a few very wet places.

Special Visitors:

January 8 - John Knox, of Denmark, late of Chicago, was a very interested visitor, wading through snow to see the ruins.

January 14 - Lyle Barcume, associate landscape architect from the San Francisco office, was in for a day inspection, and visited the principal ruins while here.

January 19 - L. K. Waring, instructor at Los Alamos Ranch School for Boys, was in with 14 of the boys for an afternoon stay in the ruins.

January 21 - Mrs. Ruth Cornwall Woodman, of the McCann Erickson Advertising Company, was an interested visitor. Mrs. Woodman prepared broadcasts for the National Broadcasting Company. Unfortunately, I did not know which day to expect her , and so was in Santa Fe on business the day she arrived, but she left word she had been treated very nicely by Mr. Chase and the CCC guide.

Nature Notes:

Until two weeks ago, four large turkeys were lingering in the canyon below the custodian's house. They were huge fellows, and looked very healthy. Coming down from lunch one noon in the Ford pickup truck I rounded a large boulder and had to jam on the brakes and slide on the snow for ten feet to keep from running over one of these fellows.

Recently Betty and I saw 30 turkeys on the higher land near Los Alamos Ranch School. They were unusually tame, remaining in sight of the truck for two or three minutes. If I didn't know better, I would swear they were tame turkeys. However, they are very shy if one approaches them on foot.

Recent patrols on the eastern part of South Mesa and on the Detached Section showed no turkey tracks. There were a great many coyote tracks everywhere, however. A moderate sprinkling of rabbit tracks were seen, and a considerable number of squirrel tracks - if I am correct in the distinction I made in the snow signs of these creatures.

On South Mesa we saw a lot of bird tracks, porsumably Juncos, in the snow around bunches of blue gramma grass. There must be a few seeds in these dry stalks which have not fallen yet.

Abert squirrels are very inconspicuous here in winter time, but I saw a nice one yesterday just a few feet from the office.

The beaver reported on last month as forging up the canyon from the Rio Grande kept on coming. He is well above the Upper and Lower Falls now, and has progressed as far as a short distance below the swimming pool, less then half a mile downstream from the camp ground. I should say he was cutting well over 50% of the young cottonwood growth. For the past en days he has made no further progress, seeming content with a makeshift dam where he has several down trees in one cluster. He hasn't showed himself yet, but his trail is clear in the last snow. One tree he cut was 14 inches in diameter.

Betty has had good luck with her bird banding this month. Her report will follow on another page. (See Supplement)

Antiquities:

About a month ago Betty discovered a small cliff-dwelling on the south side of Frijoles Canyon, about half a mile above the Ceremonial Cave. It had been a talus structure, with about six rooms on the ground floor, and the rafter holes remaining in the cliff face showed it went to a third story with one room.

This find is interesting, because it is the only evidence of cliff structures on the shady side of the canyon. Of the 17 groups of ruins charted by Dr. Hewett in 1908, all save one were on the north side of Frijoles Creek, and the exception was a ground structure on the flat across from Ceremonial Cave.

This ruins find was mentioned to Dr. Kenneth M. Chapman, acting director of the Laboratory of Anthropology, and he states he has never seen or heard of the ruin before, although he was with Hewett in here in 1908 and later came in 1916 for a petroglyph survey.

Excavation for a box culvert in the road leading from the utility area to the new residence area recently uncovered the poorly preserved skeleton of a man. The skull and long bones were saved, and the position of them revealed puzzling possibilities. The bones were twisted into unnatural positions, yet the ends of them, where natural articulation belongs, were quite close together. Had the bones been washed down the arroyo from a higher point, they would not have been so close together, unless sufficient ligaments were preserved at the time to bind them. And it is improbable that a burial further up the slope would have been so shallow as to wash out before all tissue had entirely disintegrated. So it leaves the suggestion the body may have

been twisted into unseemly contortions immediately after death and buried in the wash. But it was covered with only a foot of soil, and there was no sign of slab or other lining to a grave intended for the corpse. No artifacts were found.

The interesting feature about the skull is that, although it is positively that of a man past maturity, and, from other points of evidence, not likely under 30 years of age, it shows no closure of the metopic or frontal suture. The zig zag of the suture line is as clearly defined as in a small child. It is known that normal closure of the metopic suture is complete by the age of six years. By that time it should appear as a solid piece of the skull, instead of two halves.

In the excavation for the museum foundation just a few feet north east of the Park office, workmen found a part of a bison tooth. This is the second specimen of the kind found in Frijoles Canyon, both from points a half mile apart. The specimen checks perfectly with one identified by the University of California in 1934.

If buffalo never wandered west of the Pecos, they must at least have been considered important in some respect, otherwise the Frijolitans would never have brought their teeth so far.

I might mention that a small ground ruin of approximately six rooms was found in the road cut back of the utility area. The road did not disturb the ruin, but came close enough that clean-up revealed the wall alignments barely coming to the surface.

General:

The visitor run has been quite satisfactory this month. Interest is at a high level.

The country is going to be in good shape for the summer. There is plenty of snow and plenty of moisture, and that is what makes the Southwest bloom.

Fence cutters and last year's storms wrought hovoc with the fence line in the Detached Section. Am awaiting a visit from Jack Diehl to straighten me up on how to make a fence across a sandy wash with no bottom that will keep cattle out, when those same arroyos carry trees in flood time 60 feet long and two feet through the base.

The custodian looks forward with much worry to the task of maintaining the fence which is to be built around the main 22,000 acre portion of Bandelier National Monument. In addition to arroyo troubles, there will be trouble with local cattlemen, who cut fences as in the old days, smug in their belief that they are but carrying out "an old Spanish custom." Nothing but regular fence patrol will keep wire cutters idle. Because it would take a regular patrol to stand much

chance of catching one of these bright fellows at work. A prosecution and conviction is the only graphic lesson for fence cutters.

****

GRAN QUIVIRA

By W. H. Smith, Custodian

I will try to submit my monthly report for the last month, but it seems there is but very little to report. My register sheet shows 287 visitors entering the Monument in 53 vehicles. This number shows a decided increase over the previous month and a slight increase over the same month last year. As weather conditions have been extremely disagreeable for travel all through the month, it would lead one to think that travel has improved generally to get an increase in travel under these circumstances.

The ground has not been clear of snow this month and the temperature has held near the freezing point even at mid-day and far below in early mornings, late afternoons, and nights. There have been two or three snows and the ground is thoroughly wet. The travel that we have had over the road of approach has rutted it pretty badly. When it thaws enough to where one can obtain some more gravel, it will be necessary to haul about 20 yards more and distribute over the rutted and sunken part of the road. All this moisture the last month wetting up the mortar in the walls has cost us some falling of stones, too.

There have been very few visitors the past month that merit special mention. On January 19, we had two trucks of CCC boys, about 40 in number, registering from Camp No. 3808, Carrizozo, New Mexico.

The visitor charts came in about the first of the month, and we have been using them since. The number of contacts shown on the charts and the number shown on the report are not going to agree as we register any one entering the Monument for any purpose, so you will find a number of local people registering who are not contacted concerning the monument at all. I find these charts to be very interesting; for instance, we have no museum now so the majority of the visitors stay in that room only long enough to register while others who are more interested in the monument in general will spend 15 to 20 minutes going over what few things we have since the museum was robbed.

I notice that those who spend fifteen or twenty minutes in the museum room generally use an hour to cover the field trip through the missions and the Indian pueblo, but those who give our collection room only a passing glance are through with it all in but a few minutes. This only shows how necessary it is that there be a museum collection at each monument.

Or in other words, those who visit the monument for the monument's sake would spend as much time in the museum as they would in the field

trip if our collection was only as good as before it was robbed. So viewing this from the angle that these large mercantile companies do by the theory that a window display will sell merchandise, I should think that a museum collection helps sell those who visit on the monument. Consequently, in my estimation, the museum is indispensable to a monument.

****

WALNUT CANYON

By Louis R. Caywood

Following is the report for Walnut Canyon National Monument for the month of January, 1936:

Visitor registration, plus those who used the facilities at the Monument, give a total of two hundred and eighty-five for the month. Because figures are missing for the month of January, 1935, no comparison in travel can be made.

The weather has been exceptionally warm and sunshiny; consequently; we have been honored with visitors every day except three during our stay of over two weeks. Last Sunday, January 19, was a record day this month with 33 registrations. Old-timers of Flagstaff advise that this winter is one of the mildest they have ever witnessed.

From January 9 to 24, inclusive, the time I have been at this monument, 114 visitor contacts were made either at the ranger cabin or at the trail entrance to the island. Nine of these were made by the H.J.P. N.W.P., who showed visitors the artifacts at the ranger cabin and told them something of the life of the prehistoric inhabitants of Walnut Canyon.

Roads are in good condition with the exception of the short distance from the ranger cabin to the Lookout Point. The trail leading into the canyon and around the Island is in very good repair. As the Walnut Canyon National Monument road is connected with Highway 66 at two points and is clearly shown thusly on all maps and as the road is signed at both entrances, one would suppose that visitors from the west (Flagstaff) would enter the Monument on the approach road from that direction. However, an average of 25% of the regular tourist traffic from the west enters on the approach from the east (Winslow), completely missing the signs at the west entrance. The remedy for this would be a larger and more noticeable sign at the west entrance. This sign, I am sure, would also bring in more visitors because many going east who fail to see the signs at the west entrance will not come in from the east because of having to retrace their route west again in order to see the Monument.

Bird banding activities for the month are rather meager, but considering that the traps were set only a week gives promise that next

month will see quite an increase. Nine new bands were used in banding the following:

2 Rocky Mountain Nuthatches
1 Mearns Woodpecker
1 Rednaped Sapsucker
3 Redbacked Juncos
1 Pigmy Nuthatch
1 Gray Titmouse

We were honored last night (January 24) by an overnight visit from Sallie and Jimmie Brewer of Wupatki. They arrived about nine o'clock just as we were about to retire. We decided that a game of Bridge should mark this special occasion, but Jimmie and I were so busy talking Place names, etc., that we were badly beaten.

****

CANYON DE CHELLY

By Robert R. Budlong, Custodian

Visitors for the month of January numbered ten persons. Four of these were Government officials, and one a relative of one of the officials. These five drove to the rim of the canyons in two parties, averaging sixty minutes each party. The remaining five persons arrived at this Monument at a time when the road to the rim was covered with snow and ice. They had no tire chains for the car, and were unable to drive to the rim. They were local residents, however, who will soon make the drive to the rim when the road is in better condition.

The canyons are practically impassable, as usual. The stream is quite large, and usually frozen over except for a few spots where there is running water. The Soil Conservation Service trucks, equipped with big tires, have been going within the canyons once a week, and have regularly been breaking through the ice and getting stuck. They have a tractor within the canyons, however, and the trucks very conveniently manage to become stuck near the tractor, which is used to pull them out. Two days ago one had the misfortune to get bogged down just within the mouth of the canyon. On that occasion another SCS truck and the Park Service pickup were chained together, a hundred feet of wire cable connected from them to the stranded car, and we managed to extricate the one that was stuck. It had broken through the ice, and flowing water washed the sand from around the wheels.

Weather for the month has been about the same: nothing to boast about. Minimum temperature, 1 degree above zero, on the 8th; maximum 57, on the 15th. We have had six falls of snow, totalling but 5.3 inches. Roads have been from fair to poor.

The Custodian's Residence is about ninety per cent completed. We had hoped to be moving in about this time, but a number of matters

needing correction before the building will be accepted have arisen, and it is feared that such corrections may delay our moving for some little time. But the thought of having a real house in which to live is too good to be true, especially to the Honorary Custodian Without Pay. I have lived in six different places since first coming here, having moved twice before the H.C.W.P. arrived at this Monument to be the H.C.W.P. She is already figuring on the number of yards of curtain material needed, and the total yardage is appling -- especially with such material listed around $1.75 a yard. Then there is the matter of furniture for the house. At present we possess one steel table (government) and two cots (borrowed). With two bedrooms in the new house, bath (no furniture needed), enormous living room, office, dining alcove, kitchen and service porch . . . but this is the monthly report.

The well is finished. Moving-in of the well rig was begun on January 1, and the well was finished and the rig moved to its next location by January 17. The well rig used belonged to the Indian Irrigation Service. The men employed were also of that Service. The will is ninety-eight feet, five inches in depth. Diameter of casing, 6-5/8 inches (O.D.) Water stands within three feet of ground level. Pumping at the rate of 2880 gallons per hour the water level remained constant at forty-one feet. Pumping at the rate of 1500 gallons per hour, water level remained constant at fifteen feet. The water has not yet been analyzed, but is clear and of a good taste.

I doubt if finer cooperation than that rendered by the Indian Irrigation Service in this matter could be found anywhere. Mr. C. A. Burns, Engineer, at Central Agency, Fort Defiance, has been most courteous and helpful, and I wish to acknowledge the debt we owe him for his fine cooperation and assistance. Mr. Burt Cravath, the driller in charge of the work, performed his work in the finest possible manner. He knows his work thoroughly, and went about it most efficiently. It has been a real treat to know and to work with such men, and I wish to go on record in this report as expressing my very great appreciation of what they have done, and the manner in which it was done, from start to finish.

Mr. Lyle Barcume, the government inspector (and designer) of the Custodian's Residence, has been in a number of times during the month. He has been accompanied by Mr. Laurance Cone and Mr. Saunders and brother-in-law, Mr. Eames. We have greatly enjoyed their visits.

Mr. Paul Duvic, Engineering Aide to Mr. Hamilton, visited this Monument January 3, returning to Mesa Verde on the 4th.

On December 30 I attended a New Year's party held by the Canyon Chapter of Navajos, at the foot of White House Trail. About 350 Navajos were present, and their bright costumes made the gathering most colorful. They had invited me to attend, after the meeting held on

December 21. At their request I again addressed them, and believe that many matters pertaining to the work and activities of our Service were straightened out. Following this, we all partook of a most appetizing dinner. It was a real party, complete even to gifts of fruit, nuts, etc. It was also a very pleasant occasion, and I greatly appreciated both the invitation and the opportunity to talk to them.

And so we start another month. Last February we had only one visitor, due to impassable roads. We hope to do better this coming month, but refuse to be held responsible for weather or roads.

****

WHITE SANDS

By Tom Charles, Custodian

There have been some heated arguments in the White Sands bailiwick in the past two weeks over the question, "What is a Contact?"

Where did that word "contact" originate and what does it mean at the White Sands? It seems plain that there is a contact with the visitors of a monument when they are crowded into the walls of a building even though they never get closer than within the hearing of the contact man's voice. But it is not so clear just what constitutes a "Contact" on the 20 mile front of the White Sands where a visitor is likely to stop at any point in a museum or in a ruins, and I imagine that visitors seek information but many of the visitors to the White Sand do not seem to care to be told just how to play in the sand and frequently, if we talk to them at all, we have to run them down.

We station our ranger at the entrance to the Sands and a party of six drive up and ask, "Is there wood at the picnic ground?" The answer is "yes" and they drive on. Undoubtedly that is a contact. But the next group barely slows up, they nod or wave a griendly greeting. Is that a contact?

The word "contact" may fit in at all the other Southwestern Monuments, but for the White Sands, it seems to me that they should still be visitors.

For 58 days we had a count for 12% percent of the time, on Federal Highway No. 70 which passes through the monument for a distance of some 12 miles. From December 15 to January 15 there was an average of 13 cars per hour or 182 cars per day, (figuring on the basis of a 14-hour day). That gave us 5460 cars through the monument in 30 days. The most interesting part of this count, to me at least, is that 19.7 per cent of all cars through the monument stop some where along the 20-mile front and let the occupants play in the Great White Sands.

In the 58 day count we had 1003 California licenses, 970 from Oklahoma, 860 from Texas, 511 from Kansas and 289 from Arizona.

Thirty-five states, the District of Columbia and two foreign countries were represented. Another interesting fact is that while the State Tourist Bureau shows about 3 people to the tourist car, Barry's count shows nearly 4 occupants to each car.

Therefore we had 4402 visitors in the past month. About 50% or 2201 went to the Heart of the Sands. While this is the most accurate and complete count that we have ever had, it seems high.

The Sunday crowds are still good. On January 12 there were about 400 people at the turn-around in five hours. Dr. H. E. Quinn, head of the Department of Geology, Texas School of Mines, had a class of 70 with their parents and friends, about 126 in all. This group was saddened by an auto wreck about 20 miles from the Sands in which one boy was killed. It is said the accident was caused by dusty roads. On the same day, Govanni Bassett, editor of Popolo d'Italia, a paper published at Milan, Italy, was an interested visitor. Mr. Bassett was familiar with the White Sands before he left Italy and said that he made the trip largely to see the White Sands and the Carlsbad Caverns. He pronounced them the two leading attractions of America.

Here is another visitor who is no mean traveler. The manager of the Burroughs Adding Machine Company of Amarillo, Texas, was enjoying a visit from his mother and another woman from Ohio, and desiring to show them the White Sands they bundled the family up and drove over, 340 miles, spent a couple of hours here, and drove home the same evening.

Our honored guests this month were Earl Jackson and Betty of Bandelier, T. C. Miller and Family of Chaco, Willis A. Rowe and wife of Sequoia, Adrey Borell and Bettie of the Wildlife Division, and Jack Diehl.

You may be interested to know that the White Sands float won first in its class at the Sun Bowl Carnival. There were 102 floats represented.

Otto Goetz, California writer of some note, recently published a story of the White Sands. It is founded on the Indian legends as to the fertile valleys, the fine river and the prehistoric settlers. You may be interested in the last few lines:

"Visions into bygone ages, when majestic here a river
Wound its way through fertile valley, home of now forgotten man.

See the turrets of the city and the splendor of the mansions,
Swift canoes with sturdy oarsmen, flitting on the glossy stream.

Conquest by the mighty army, and destruction of the city,
Slaying of the peaceful dwellers, conflagration of their homes.

Year by year, the month of August, a memento of the carnage,
Reappeared the crimson bloodstains, in the waters of the lakes.

But revenge now followed swiftly, for the Sun-god in his anger,
Smote the ruins of his alter, and a gushing spring came forth.

Lo! Behold the living waters changed to grains of gleaming gypsum
Rising, mounting, creeping, moving, high above the fallen temple.

Ever onward crept the sand dunes until the fertile valley,
City, river, orchards, mansions, lay beneath their snowy mantle.

And the mischief loving spirits toss them playful, hither, yonder,
Scatt'ring here a magic carpet of forgetfullness and rest.

And the whispering night winds murmur, "Was this fairyland created
As a playground for the children of some future happy race?"

****

CASA GRANDE

By W. J. Winter, Custodian

As expected, the travel this month showed a considerable increase. The visitor count was 3370, an increase of a thousand over January of last year and of twelve hundred over last month. The tourist season is getting into full swing -- our curb is lined with cars bearing "foreign" licenses and the general grade of visitor is noticeably higher. Also more wealth and prosperity is in evidence. Many chauffeur-driven equipages come in, and the boys are turning down enough dollar tips to pay the rent.

There were some visitors this month who were worthy of special notice. On the 9th we met Dr. W. H. Campbell, of the Desert Laboratory of the Southwest Museum of Los Angeles. January 10, the State Supervisor of Vocational Education, Mr. Arthur Snyder, came in to see the ruins. On the 17th we greeted Mr. William Ross Teel, state archeologist of Indiana. January 20, we had the pleasure of meeting Mr. Amos Alonzo Stagg, famous football coach of the College of the Pacific, Stockton, California, and retired coach of the University of Chicago. January 24 Mr. W. L. Simpson of Jackson, Wyoming, came in. Mr. Simpson is U. S. Commissioner for the Grand Teton area. January 5, the ruins and museum were viewed by a group of 80 CCC boys from the camp at Rillito, near Tucson. We are glad to see these large groups but wish it were possible for them to come on a week day instead of Sunday when we are already swamped with visitors. If I am not mistaken, the CCC camps do not work on Saturdays. Such has been the case, at least, in other areas where I have worked with them in the past.

As usual there were a number of NPS visitors to Headquarters, but

few came in to see the Monument. December 27, we met H. A. Anderson and R. L. Carlson of the seasonal ranger force at Yosemite. December 29, and 30, Earl and Betty Jackson of Bandelier paid a most welcome visit. Earl and I were inflicted on the University of Arizona at the same time a few years ago and the place hasn't been the same since.

Weather this month has been generally pretty good, though at times a 50 degree difference between day and night is apt to be uncomfortable. The maximum temperature for the month was 76 on the 11th, 14th, and 16th. The minimum was 19 degrees on the 20th. This is the coldest recorded this winter. This low temperature was at night, of course, though several unusually cold days were also experienced. During this period I was frequently called upon to defend the climate against the attacks of determined Californiacs, who miss no chances. (Chambers of Commerce please note). I think we managed to hold our own. A little moisture was noticed, the precipitation being .03.

This month we had a valuable addition to our force in the person of A. T. Bicknell, Custodian of Craters of the Moon National Monument, Idaho. Al's Monument is snowed under about this time, so instead of hibernating he got detailed down here. Al is an old timer, having spent some 15 years in Yellowstone and knows his way around. We are all mighty glad to have him here. Now, in turn, Charlie and I are wondering if we can't be detailed to Craters of the Moon next summer when the thermometer starts hitting around 115 here. Al says he could use us there all right in his summer season.

As you know, we are asked many questions concerning the cactus of this area. Last week a rotund gentleman who registered from New York asked me if the cholla cactus was poisonous and if it really jumped as reputed. It seems that a piece had gotten on the back of his hand and hung on. "Oy!" said he, "It was like a vicious creature, s'help me, it was like a vicious creature!" Though much impressed I assured him that the cactus did not jump and that he had little to worry about in the matter of being poisoned.

Our sewage disposal system still gives trouble. We are rigging up a makeshift pump but hope that for the first of July the Great White Father in Washington will furnish adequate funds for a proper solution of the difficulty.

An infestation has been noticed on some of our mesquite trees. The Naturalist Division informs me that it is not usual and should be investigated by a forester. Is such an expert available?

The problem of guiding is not so bothersome now that we have three men on guide duty for half of the week. Of course, if we try to give museum lectures on busy days it keeps our hands full. We tried putting the ruins trips on a half hour schedule and with three men guiding it

worked fairly well. If a man spends about 30 minutes in the ruins, then 30 minutes in the museum and the next half hour out in front directing traffic, registering, etc., it keeps things from getting too monotonous and keeps the visitor flow moving in a reasonably satisfactory manner. Under this system visitors who arrive in the first ten minutes after a party has left for the ruins are sent to join that party. All others are joined to the party in the museum. Thus no one has to wait more than 20 minutes for a ruins trip and that time may be spent in the museum if desired. If some one is in a big hurry and prefers a shortened ruins trip to waiting for the next regular one, he may be sent on to the ruins with the warning that the guide is over half through with his talk and that another regular trip starts on the half hour. Most people would rather join the museum group and take the next scheduled ruins trip. With three men working this seems to be the simplest and most efficient system. With only two men guiding there does not seem to be any satisfactory system possible. We just get along, doing a partial job, and are thankful when someone from Headquarters steps in and takes out a party -- something which we realize they should not be expected to do. However, it looks as though we shall have our three men for busy periods until April 1, which will almost cover the busy season.

****

SAGUARO

By Paul Beaubien, Ranger

Left Walnut Canyon December 29 and, after a short stop at headquarters, I arrived at Saguaro National Monument New Year's day. It was like stepping into another world. Even the visitors were different.

Walnut Canyon National Monument is beside a transcontinental highway and the visitor there is in a hurry. They wish to see and learn as much as possible in a few minutes before rushing to the next scheduled stop. It reminds one of Union Depot. At Saguaro, no one is in a hurry. The visitor rolls in slowly and prefers to sit around and chat for an hour or two. If the ranger wishes to discourse on cacti, it is O.K. with them, but they would just as soon talk about something else. Here more than anywhere else, education must be "sugar-coated" for the visitor does not come to learn but just comes to have something to do.

Another difference between here and Walnut Canyon is that visitors arrive at Walnut at any time between sunrise and sunset while Saguaro is strictly an afternoon monument with most visitors after 3:00 P.M. Visitors have asked me several times where they could find some of the more rare species. Twice I've been asked if I had any to sell.

Am keeping a list of questions asked by visitors besides checking the frequency with which each is asked. Find that nearly all questions are quite sensible. Hope to be able to answer most of them before they are asked next month.

On arrival here I took quarters at CCC camp SP-11-A. Have certainly been well treated by everyone at camp. However, the evening meal is served too early to make a lengthy stay desirable. I next rented a small house about a mile and three-quarters outside of the south gate to monument. After moving, I received some 25 to 30 dollars worth of material from the University of Arizona to make a residence out of a storeroom which the University owns on the monument. So I expect to have a place to live on the monument soon.

Haven't mentioned travel figures because I haven't any that are adequate. It took some time to erect signs directing the visitor to the store room where I built a register stand. Then I found that few people would come that far (4 miles) into monument. By checking at north gate, I believe that between 30 and 35 visitors arrive per week day, with Sundays averaging around 110. As an estimate only, I believe that 800 people visited Saguaro National Monument from December 31 to January 27.

****

TUMACACORI

By George L. Boundey, Custodian

Visitors for January as follows:

Unattended	228
Attended	1379
Total	1607.

The new system of counting visitors is a great success as far as our monument is concerned. It keeps us more on the alert and I think visitors will get better attention all around.

We have had an unusually intelligent class of visitors this month. Situated as we are off a main highway, our visitors make the drive to see the Mission and they are interested in everything one can tell them about the Mission, about the local population, the cacti, the birds and animals seen locally, and especially about historical points in the vicinity. From the questions the average visitor asks this winter I would say the Depression does not rest half as hard on them as it did a year ago.

The first of the month we had a visit from Mr. and Mrs. Borell of the Wildlife Division. We enjoyed their visit very much but am not enthusiastic over the idea that our local Sparrow Hawks should be protected instead of exterminated. In the winter time the water does not flow in the river, and the irrigation ditches are dry. We keep our faucets (of which there are several about the place) dripping, and I would say at least 500 different birds each day drink from our faucets. Almost every bird wintering in this section of the country comes here to drink.

When the grasshopper season is over Mr. Sparrow Hawk does just what his name implies; he goes onto a strict diet of Sparrows, not the English Sparrow, but the Song Sparrow, the Fox Sparrow, and a dozen other Sparrows which winter here. The Agricultural Department claims these seed eating birds are worth each year about four dollars to the local farmers. Just as the Indian followed the herds of Buffalos in the early days, so does the Sparrow Hawk follow these flocks of birds, watering here. There are at least five Hawks drawing rations from our song birds. Hawks are supposed to eat at least twice a day. If that is true, ten birds will be killed each day and at $4 each, that is forty dollars a day lost by the farmers; now figure three months of this poaching - no wonder the farmers are hard hit and the Government has to help them out.

Speaking of birds, we saw a white Egret on the river on one of the coldest days. There is a place where the water rises to the surface in the river, and here one can usually find several of the Great Blue Herons, but this is the first time I ever saw the Egrets in the winter time.

The Boss and Mr. Tovrea, chief engineering aide, spent part of a day at the Mission giving things a thorough looking over. We always enjoy having the Boss come down; it always seems as tho the wheels go round a little better after he has been here.

Robert Rose, Chief Naturalist from Casa Grande Ruins, with his wife, daughter, and mother, paid us a visit during the month. We are always glad to have a chance to talk things over with the Chief.

Fifty-four pupils from the Nogales High School had their annual visit and lunch at the Mission. At least a dozen schools from the surrounding country pay us at least one visit a year and a number of them come twice.

We have had some artists painting here during the month, but the spring is their usual time to paint.

D. M. Wootton and party from the Chicago, Rock Island and Pacific Railroad Company spent some time at the Mission. They were also calling on the dude ranches in the vicinity of which there are several.

****

WUPATKI

By James Brewer, In Charge

Travel:

45 guests registered at Wupatki Pueblo; at the Citadel group, 63; two names are duplicated, leaving a total of 106 visitors to this monument in January, 1936; 1935, 60; 1934, 34.

States were represented as follows: Arizona, 12; California, 6; Minnesota, 2; Massachusetts, 2; Pennsylvania, 3; Ohio, 2; New York, 2; Georgia, Texas, West Virginia, Iowa, North Dakota, Colorado, Maine, Oregon, Illinois, Utah, Virginia, and Nebraska, 1 each; 1 visitor from Vancouver, British Columbia.

The new "visitor survey" or "educational contact" system brings a question to my mind. A visitor who registers at the Citadel group and then at Wupatki Pueblo is counted once. Although he has used trails, roads, and improvements nine miles away from Wupatki Pueblo and has seen a different type of scenery and pueblo, the count is the same as if he had come only to Wupatki Pueblo. Is it fair that after he comes on to Wupatki Pueblo, has used nine miles of monument maintained road, the Pueblo trails and improvements, he is still "one"? From an angle of wear and tear Wupatki should call him "two". While Sunset Crater is administered by Wupatki personnel, there is no thought of eliminating names duplicated on Wupatki or Citadel registers and Sunset Crater registers only at one or the other be counted one-half?

Weather:

December 25 to January 2 not recorded. January 2 to January 25: High temperature 68, on the 13th; low is not recorded because of inaccurate cylinder. Precipitation .02 on the 7th (snow) and a trace of hail on the 15th. (Dr. Colton has loaned me another thermometer)

On the 14th a terrific gale blew up and lasted all day, all night, and the following day, ending abruptly in a fall of hail stones.

There were 11 sunny, 8 party-cloudy, and 4 cloudy days. Altogether it has been a fair and very warm January; local sportsmen say that the deer are still up on the peaks and the wild turkeys still in the high country -- which is very unusual at this season.

Newsworthy Visitors:

Alexander Woollcott and friend Joe Hennessey on the fourth, fifth, and sixth. I heard Mr. Woollcott one Sunday evening on the radio lamenting his inability to get away from reach by phone. As he put it "to be somewhere where no one could call him to say his maiden aunt had just been arrested for disorderly conduct." I extended an invitation to Mr. Woollcott assuring him no one could reach him here by phone or wire.

If Mr. Woollcott and Mr. Hennessey enjoyed their brief stay here as much as we enjoyed having them, I'm sure they will return.

On the 8th, Mr. Van Valkenburg of Soil Conservation Service called in at the Pueblo.

Spring Cleanup:

Drainage water pipes, diversion channels, room ducts, and roofs are undergoing a workout in anticipation of February rains. Vegetation that has rooted itself in back-dirt dumps is being removed so that these piles, intended to washout, will do so.

Water Report

Employing the same method reported in August, 1935, I have again measured the output of each of the local developed springs. At each spring an increase is noted excepting Heiser Minor. The outlet of this source is so nearly identical with that of Heiser Major, a matter of inches, that the decrease may have some influence on the greater increase of Heiser Major.

As in August these figures do not include two undeveloped springs, Little Heiser and a prehistoric spring one half mile west of the pueblo.

Result: (Gallons flowing in 24 hours)

	August, 1935	January, 1936
Heiser Major	1,004.65	1,178.28
Heiser Minor	421.30	225.00
Coyote Spring	1,032.43	1,200.00
Wupatki Spring	514.28	720.00
Total	2,972.66	4,023,28

Increase 1,050.62 gallons per day, for all springs.

Like Paul used to say about the travel figures at Walnut Canyon, I feel as though the round numbers look like an estimate or a guess. However, if it takes Coyote Spring 72 seconds to fill a gallon can, doesn't it run 1,200.00 gallons in 24 hours?

The Wupatki Spring pipe line has been freezing up, and I think I'd better sink it a little bit lower and add enough pipe to reach the tank. (Since talking to you I know this is best and will do it).

Windometer:

Because I am convinced that the wind at Wupatki is sufficient to supply power, lights, etc., but am without proof, I have designed the above instrument. Using the speedometer from the wrecked Dodge on Highway 89, I have constructed a fish-tail vane with a propellor. The propellor is mounted on the cable connector, the speedometer and fish-tail are bolted to a perfectly balanced horizontal bar mounted on a ball bearing and elevated on a pipe standard. When the windometer coincides with a moving car speedometer (on a still day) I think a

a fair estimate of the speed of the wind is to be had. By varying the pitch of the propeller this correlation may be obtained. However, maybe I'm nuts so if you have an opinion here I would like to hear it! (A mechanical opinion).

Quail:

While Sallie and I were measuring Heiser Spring, a covey of 10 or 12 quail came in. The man in charge of the camp says they come in every evening and eat with the chickens; also that there is another covey watering at Rodin Springs.

Trappers:

Although I have no figures on their catch, there are trappers at Arrowhead Tank, Heiser Spring (a sheep herder traps between) and at Rodin Spring.

Navajo Arts and Crafts Exhibit:

The First Annual (?) Exhibit of Navajo Arts and Crafts at Wupatki National Monument is budding.

There are visions of many types of weaving displayed in the amphitheatre; a weaver, a spinner, a silver worker all at work; tables and racks displaying finished products; judges and awards;vegetal dye materials and their results.

Between our vision and accomplishment we see many evenings of "seed sowing" and encouragement to the potential exhibitors, collecting and rejecting exhibits, trails and disappointments; but in the end we hope for better Craftmanship and a finer appreciation of Navajo arts.

Lecture:

On Friday the 17th Sallie took Ruby B'Gai to Flagstaff, contacting the fourth grade pupils of the Emerson School who are studying the Navajo in their Geography class. With a question and answer talk by Sallie, Miss Robertson, and Ruby, they managed to keep their audience interested beyond the dismissal bell. If I remember correctly, this would certainly require a good deal of interest.

Etc.

And so to Citadel, the mail box, Sunset Crater, and on to Walnut Canyon where Louis and I have a pitched battle of place names scheduled for this evening.

****

SUNSET CRATER

By James W. Brewer, In Charge

Visitors January, 1936, 80; 1935 and 1934, not recorded. (The first travel figures for 1935 were taken up on March 25, at which time 53 visitors had registered since December 25, 1934. No register was provided in January, 1934.)

States were represented as follows: Arizona, 16; California, 10; Colorado, Massachusetts, and Maine, 3; Ohio, Nebraska, and Missouri and Minnesota, 2; Michigan, Texas, New York, Pennsylvania, Georgia, and Oklahoma, 1.

On January 20, K. & F. Al Ravif of Nya, Arabia, registered in Arabic or Arabian (no, no, I can't read it--he registered in English also). Just to find out if the Arabic is "registration" and not a remark I am sending the line off for translation and will let you know later what he wrote.

****

TONTO

By Woodrow Spires, In Charge

Another month has rolled by with nothing out of the ordinary happening.

The weather has finally broken; we had two light freezes this month, neither hard enough to crust the water, only a thin crust around the edge of the drip. The minimum for the month was 32 degrees, while the maximum reached 72 degrees. Most of the days were very pleasant with sunshine. One cloudy and two part cloudy days being recorded. Precipitation was less than .50. I guess at that we are lucky; reading the papers I see where in the east a low of 56 degrees below zero was recorded, and some of my visitors tell me how they go for weeks at a time without seeing the sun while the thermometer hovers around zero.

Travel for the month shows a decided increase over the same period last year, when between December 22 and January 25, 425 people visited the monument, while this year between December 26 and January 25, 757 visited the monument. This gives an average of 24 a day this year against 12 last year, or an increase of 100%.

Here is a resume of SWM Stencil 16. Total visitors at the monument 757, total time guiding 7945 minutes, total visitors taking field or ruins trips 536, total number of field and ruins trips, 93, total time field and ruins trips 6235 minutes, average time field or ruins trip 67 minutes, average group field or ruins trip 6, total visitors museum trips 407, total museum trips 84, total time museum trips 1710 minutes, average time museum trip 20 minutes, average group museum trip 5 -- special trips to the Upper Ruin are so few (3) that I only counted them as separate field trips.

On Wednesday, January 15, I was honored with a visit by W. A. Rowe and wife. In the summer Mr. Rowe works as assistant naturalist in Sequoia National Park. Incidentally Mr. Rowe trained the animals for the picture, "Sequoia." That afternoon I closed shop early and accompanied him to the A-Cross CCC Camp, where he gave a lecture and showed some colored slides; it proved very interesting as well as educational afternoon and evening.

Sunday, January 19, Amos Alonzo Stagg, "The Grnad Old Man of Football," spent two hours visiting his first group of prehistoric ruins.

Thanks to Mr. Whitehead of the Southwestern Aboretum, I now have two Rainbow Cacti which are, "so cute," according to most of the women visitors.

The car count which I started last month has progressed no further as there has been no spare time this month. The earliest party was 7:30 A.M., while the latest was 7:00 A.M. A total of six parties were guided after 5:00 P.M. during the month.

****

CHACO CANYON

By T. C. Miller, Custodian

General:

The Custodian was absent from the Monument on annual leave, from December 22 until January 5. Junior Naturalist Caywood was in charge of the monument during my absence.

While away we had the pleasure of visiting the Carlsbad Caverns again. Several changes in trails and lights had been made in the past four years. On January 4, we visited the playground of Custodian Charles, the White Sands National Monument. I have seen the White Sands many times before, but it is much prettier now, since it belongs to the National Park Service. Sorry to have missed the Red Lakes, but I had the pleasure of shaking hands with Tom Charles and I took his word for the red water. Mr. Charles told me that they were running 85 cars per hour on off days, Boss! That is some travel record. Tom has a good monument with lots of room,and lots of visitors. I told Mr. Charles where he could see another wonder, and I think he was about half way convinced that the White Sands did have a little competition.

I think it is rather funny to hear each Custodian and Superintendent tell about their Park or Monument. I think in the last month's report that Custodian Winter did not mention all that was on his mind about the best monument in the Southwest, and if I remember right one Bozo had the best Cattle Guard in the world or something. Of course, if that is all that boy has, let him have a good time; I am not men-

Arizona Archeological and Historical Society Library

1398

tioning any names, but at least the boy is honest. The more I see and hear of these Monuments, the more I think of Chaco.

The approach roads into this monument have been passable all the month. Two light snows, sunny days and cold nights have been noted. Weather conditions have been excellent for the most of the month.

Weather Statistics:

Maximum, 45 on the 16th; minimum was 1 below on the 2nd. Precipitation - .26 inch of melted snow was recorded for the month.

Travel:

260 people entered the monument in 88 cars, represented six states. The travel has been light this month; that is, actual visitors that were interested in the ruins. Travel through the monument has been very good, but only a few visitors were registered in the museum and conducted through the ruins.

Soil Conservation Project:

On January 17, 39 men were laid off because the ground was frozen until it was almost impossible to work the Soil. 11 Men were retained to quarry rock for future use on the revetment work and the building of the basket dams in the Chaco wash. Much could be accomplished at this time on the basket dams if we had the money to buy materials. While the ground is frozen the trucks can haul big loads in the Chaco wash, but after the thaw comes these rocks will have to be carried quite a long distance by men. All revetment work around the ruins has been suspended, waiting to hear something definite from the Washington office about buying the materials to construct the big dams.

On January 4, Project Manager McKinney and Naturalist Caywood were out photographing the ruins and washes in the Canyon, 11 miles east of headquarters. While walking up one of the large side arroyos they found what they call a prehistoric turkey nest, at least ten feet under the present ground level and only a few feet from a Pueblo III site. The eggs were removed in a large block of clay and placed in our museum for study. Boss, if you have any of that preservative left, please send me a can to preserve these turkey eggs and other things of interest that we have in our museum.

Chaco Fence Project:

The monument boundary fence that has been under construction since October 14 is now complete, except a little cleanup work which will only require a few days to complete. The contractors' men have suffered many hardships the past two months. Cold, wet, and muddy at times, it has been a hard job from start to finish. The contractor has pushed the work just as fast as he possibly could under the circumstances. Much time has been spent going and coming from work; at times it was almost

impossible to get the trucks out to the job. Trucks were sticking in the mud when it was wet, and in the sand when it was dry. Daily inspections were made by the Inspector Mr. Williams and the Custodian. We now have a fence of which we are proud. Much credit is due Mr. Williams, who engineered the building of the fence; it is a good job. The fence will keep out all stock and mark the Monument boundary for many years to come.

At my request, Associate Engineer Hamilton sent Paul Duvic, Chief Engineering Aide, to measure the fence. Following is the measurement made by Mr. Duvic, which should go on file for future use:

Main portion of Monument------	9,881.7 rods,	Gates 13.	Cattleguards 2
Section 24----------	1,270.3 "	" 1.	
Section 26----------	1,081.4 "	" 4.	
Detached Portions----------	410.7 "		
Extra----------	27.9		
Total	12,672.0 Rods		

Concrete in Corner, brace and Strain posts--- 94.553 cubic yards.
Concrete in Cattleguards---------- 12.4 " ".

****

AZTEC RUINS

By Johnwill Faris, Custodian

We well realize that time waits for no man, but it is hard to realize that time has slipped up on us like it has. We are still checking over the report for December, in accordance with your suggestion in the last "Broadcast," and here it is time for the January report.

Anyway, Boss, every minute of the New Year has been full of action of some kind. We are somewhat disappointed with our visitor record for the month, in that it falls short of last January, while weather and road conditions are on a par, if not better. The fact remains, however, that visitors for the month total 225 -- a very good month average for similar time over a six-year period.

We feel that these visitors received a very complete setup of our attraction. It is interesting that during this season of the year we would have visitors from both England and Australia. It is very interesting,too, to note that almost without exception these visitors take pains to tell us how much they enjoy our attraction, and how far ahead of the other nations this country is in the public service that is covered by "Our National Park Service."

It is often a source of worry to them, that our people do not take a greater interest, and that they often, seemingly, just take the Park Service for granted. It has given this monument great pride in being

one of the units which is, not once but several times, mentioned as one of the outstanding wonders of the world.

A feature, too, that is interesting -- not once have I noticed an American tourist that has traveled in other countries, but what in going through have called to our attention how wonderful such and such feature in such and such country was to them. Of course, I appreciate that many, many American citizens have traveled that never mention their travels, but with very few exceptions the foreign visitor always calls attention to the wonderful features covered by the Park Service, and how superior it is to that of their own country. I certainly do not want this to infer that we feel the American public is unappreciative of our efforts. As a general rule, we find most of our visitors very appreciative.

Regular monument routine has been average for the month. Mr. Hart has been making every attempt to outline our various duties and responsibilities in such manner that it might be much easier to check up on the way we are keeping up all ends. We find, too, that the interest headquarters is showing as indicated by the last "Broadcast" and the recent inspection forms is most invigorating.

This monument feels, Boss, that these new policies are going to do more to build up our monuments than any CWA, FWA, WPA, or any other work program. I do not wish to belittle any of these programs; they have all aided wonderfully in the advancement of our work, but all their worth is more or less from the physical or material standpoint, and these new developments are calling upon improvement of individuals.

I know from my own experience that, while we take every pride in our monument and its appearance, that we get more or less discouraged in that in the past your duties have made it impossible for you to get around more than once or twice a year. Maybe then for only an hour or two. Well, the result was that we could have spent a week scrubbing our comfort stations, raking the court, etc., and you and your party may never see the features that represented so much toil. True, we had the satisfaction of knowing that we were ready had you noticed that particular point, but even then it was sometimes discouraging. Now we will know that our efforts will pass the most rigid inspection. And, Boss, I do not want you to think that many things get by you unnoticed. I meant in the above that since we did not particularly pass by the very point that meant all the work, that we might feel that it was unnoticed. Anyway whatever was the case, I sincerely feel that conditions are going to be improved, and this monument is most pleased to note the present trend in the betterment of our monuments. You have the assurance of both Mr. Hart any myself that we will do all possible to cooperate and shall endeavor always to have our monument ready for the most critical inspection without a minute's notice.

The Southwestern Monuments Stencil No. 16 is interesting, but I am a little confused as to just how it will function in the midst of our busy seasons. Often times, Boss, one guide will start the party, join up with the other guide, have visitors join up with him, take the other party, etc., and I am wondering just how it will work out on the report. Then, too, in the busy season it is going to be hard in many cases to know just how long we are with each party, remember the number in each party, time in museum and field trip, etc., especially as we often in summer do not stop for even a few minutes from early morning until late at night. Perhaps you who have tried this through a busy season can give us some clews as to just what to do in this case.

The E.C.W. work here is moving along as well as can be expected. We are very much elated over the fact that at last we have some projects approved and have a few dollars at our disposal. We hope to end the sixth period without a single project unfinished. Of course, that is with the understanding that the house be counted out entirely.

One feature of the CCC work that is a blessing to this monument is the fact that we now have all but one of the old sheds torn down. This one we will have to leave until the end of the period, but we certainly plan to have it down before we lose the boys entirely. The small patio in the rear of the Administration Building will also be complete in a very short time.

The regular monument duties of the Custodian were no heavier than usual. Other than the CCC work and that of the office, Mr. Hart has shared largely in most duties. Your Custodian made one trip off the monument for lecture purposes to the Durango Chamber of Commerce annual banquet. Several trips were made to Durango in connection with the ECW work.

Closing a very pleasant month with the anticipation of starting on one even more interesting, we are.

****

CHIRICAHUA GEOLOGY REPORT

By Norman Smith, Jr. ECW Geologist

Your letter signed by Park Naturalist Robert H. Rose on December 16, 1936, has been received. The weekly report forms were extremely welcome.

My work here will end about the first of February. By then I will be able to detail all locations of geologic interest on the trails. In fact, I can do that now. The rest of my time here will consider extensions of the scenic rocks beyond the present boundaries of the monument,

with a review of literature on the geology of the general region and some time to write my report.

As to samples of the rocks for display and use by Park personnel it seems agreed that Massai Point is the best place. Some kind of a structure there to protect them from the weather seems desirable. It, of course, will have to be designed by the Division of Plans and Design after the Naturalist Division decides on the size. The size will depend on the number and size of specimens. After a review of my notes, I will decide the number suggested by field work. But the naming and description of rocks will have to wait for examination under the microscope. This examination may also indicate more or less number of specimens necessary to be wholly representative. In which case a geologic map may be indicated as more justified than seems the case so far in my examination. If so, by that time a topographic map will be available and a geologic map can be made at the same time specimens are located for enrollees to extract and transport to the site of the exhibit. From the details of my report a naturalist-guide should be able to distinguish the several varieties of lava so as to point out or mention them in his talks with visitors.

I noticed the topographic map of Chiricahua mentioned in your monthly bulletin as tho the map was completed. I am told it is not completed so I hope it will be soon. I refer to the work of Mr. Andrew Clark which would of especial value to a geologist such that my return here for a week or two after the map is ready would be worth while.

****

CHIRICAHUA

By Wm. Stevenson

Following is the monthly travel report for Chiricahua National Monument:

During the month 250 tourists arrived in 52 cars. The increase over the past month is undoubtedly due to the ideal weather conditions.

Norman Smith, ECW geologist, has been compiling a great deal of data, on the rock formations of the monument, which will prove valuable to the ranger force. In the past some of the "dudes" have been able to embarrass us.

****

CHIRICAHUA E.C.W.

By Wm. Stevenson, Project Sup't.,

I herewith submit the following report for the month of January:

Fourteen hundred feet have been completed on Sara Deming Trail this month, making a total of 4900'. Approximately 500 feet remain

to be constructed for a tie to the old Balanced Rock trail. The crew will then be started at Masaai Point to make the connection thru by way of Balanced Rock.

Echo Trail can show only 200' completed this month; however, a great deal more yardage has been handled than in any previous month.

Fifteen hundred square yards of bank have been sloped on the Bonita highway. The highest rock bank was worked this month, and it is estimated that 2000 cubic yards of material have been moved.

The Ranger Station at Headquarters Area is 75% complete. The roof is finished, window frames are in place, walls are plastered, and the flagstone porch and the fire place are completed.

The Bath house is 60% complete.

January 21-24, we were visited by Hugh M. Miller, Acting Assistant Superintendent, Southwestern Monuments.

****

BANDELIER FORESTRY

By James Fulton

During the first part of this month, I devoted my time toward the completion of Bandelier's 1936 fire atlas and fire control plan. Last year's plan and atlas, constructed by me, were the first for this monument. The new atlas is a revision of the old one, but it is still incomplete. Next year, new information will be available which will permit the atlas to present itself in a complete form.

The last two weeks of January, I am engaged in cutting timber for vigas and lintels to be used in the new museum. The timber is being cut on the Santa Fe National Forest About ten miles west of the headquarters area. Twenty inches of snow at the scene of the timber operation complicate matters a little; but, at the same time, the snow makes a good skidding surface. A caterpillar tractor is being used to snake the logs to the loading point; a tractor-skid pole combination loads the logs on a trailer; and the timber is hauled to the building site to be converted into vigas and lintels.

****

CAPULIN MOUNTAIN

By Homer J. Farr, Custodian

This month has been a great month for the stockman. Cattle and horses are fatter than any month in the year for a good many years, something very unusual. No extreme cold weather and two or three small snows and very even temperature both day and night has been experienced. This partly accounts for the splendid livestock condition.

Visitors, between three and four hundred, have called on our monument this month.

Roads and trails: The trails are in fair condition, but the roads are in a deplorable state of affairs. The road must be taken care of soon or the park entrance closed, as it is not right to permit the public to travel the road two-thirds up the mountain, then on a narrow road find an unsurmountable barrier in the way of a rock slide and not a place to turn around. I have repaired the road two different times this winter and before long it is going to need it again. However, it is passable right now.

****

MONTEZUMA CASTLE

By Martin L. Jackson, Custodian

Have had the usual Arizona weather throughout the month -- meaning clear and warm by day, with temperatures dropping at night. In proof that we have some winter climate, some of the mesquite bushes still have green leaves.

Our register book shows 612 names for the month. Registrations from 28 states and one party from British Columbia appear.

Reports on roads leading into the monument are that they are full of chuck holes, and badly corrugated, which is to be expected because of the long spell of dry weather.

Since you fellows in the office are giving this monument so much credit for the decrease in number of visitors to the Southwestern Monuments, I feel that it might not be amiss for me to say a word or two. It would seem that you have me pretty well cornered. And you know it is claimed that even a rat will fight when cornered.

Some, if not all of you, will recall that back in 1933, when the present parking area was put in use, when all cars, picnic parties, overnight campers, and etc., were shut off from the lower grounds, that I ventured the prediction at the time that it would bring about a big decrease in the number of visitors to the monument -- that people from the near by towns, the Pioneers of the Verde Valley (400 or 500 strong) would go elsewhere to picnic.

I respectfully submit the following figures for your consideration: They, I think, will bear me out in my contention that the decrease in numbers is due entirely to Arizona people.

Have just checked the last quarter of the travel year of 1935 against that of 1934 for the same period. Results: 1935 was off 20% as against 1934, and we had 40% more out of state registrations in 1935 than in 1934.

After all, the new parking area has its advantages, as national parks and monuments are not administered entirely for local people and picnic parties. Naturally, when you have locals or picnic parties on the ground, they require more or less of your time, leaving less time to devote to other visitors. As to the new method of checking visitors, will have to check over a period of a year before any very definite conclusions can be drawn as to how far off we have been in the past.

****

PIPE SPRING

By Leonard Heaton, Acting Custodian

Again I sit down to make a report of the activities of Pipe Spring National Monument, which is always a pleasure after it is in the mail, especially when there isn't very much to report.

The travel has been about normal, with the total number of 307. Of this number I have given guide trips to 53 in and about the fort and monument. Ten went through the fort while I was working in another part of the monument, and before I could get to them they were ready to go on their way.

Among the visitors to the monument this month were Al Kuehl and Carter of the Landscape Division, Superintendent Guy D. Edwards of the Grand Teton National Park, and Mr. Knight of San Francisco. These men spent 30 or 40 minutes with me visiting and going over the E.C.W. projects so that we have our differences settled up to now. Don't know what will develop later.

In one of my field trips with a visitor we discovered an "Indian death warrant." The lead was from an old time rifle and has been fired into some soft material as indicated by the way it is mushroomed. Its measurements are one half inch at the base, one inch across the mushroomed nose, three-quarters inch long, and it has all the markings of a homemade slug. This slug was found at an abandoned camp site of the early Indians, about one half mile south of the month. It is only a guess as to what the bullet was meant for when fired.

January 21, with my family, I went up the hill to the Major Powell monument and placed a marker there, gave the date of the discovery by the CCC boys and a copy of the survey note, together with a warning to those that might pass that way not to destroy or deface the mound or grounds there.

Our weather has been very ideal for work and the CCC's are getting a lot of work done on their projects. The road from Pipe Spring to Fredonia, Arizona, has been widened to Federal standards, most of the turns have received a trimming, and gravel has been hauled on eight miles of the road. Mr. Draper, Superintendent of the E.C.W. work, tells

me that they will have about ten or eleven miles of road graveled this week, but didn't know how much longer they would work on the road. I do hope that they can find time to finish up the road before the summer travel starts.

While I think about it, I want to put in an order for a sign, 3' x 5' or about that, to be placed at Fredonia directing the travel to "Pipe Spring National Monument 15 miles, An Old Mormon Fort."

I am wondering if Superintendent of the Grand Canyon National Park would want "Grand Canyon National Monument on this sign, too, as the road leads by Pipe Spring.

The E.C.W. work has not progressed on the monument as rapidly as it should; the reason is that they have been changing men until they have had three or four new bunches on the jobs this month.

But as it is, the following projects have been coming along well:

E.C.W. 308 Ditch Diversion; which is 90% complete below the road, just the finishing up touches to it. In working this ditch they have also been working the campground grading of the road and camp sites, so when it is all leveled off there will only be the hauling of the gravel on the camp road and that part will be complete.

ECW. 718 Walks; Rock 80% laid from the west building to fort.

These three projects are the only ones that have been worked because there has been a "tie up" on the funds to purchase material for the other projects, but this I understand has been taken care of. Mr. Draper tells me that as soon as he receives authority he will purchase the material for these other projects on the monument.

I am attaching to this report, the report called for on SWM, Stencil No. 16, for January up-to-date. This new duty has added to my necessary personal equipment. Which, I am wondering, will be the most economical, one of the $1.25 type or the higher priced time keepers? It seems like my luck with watches is very limited as they usually stop in about six weeks regardless of their guarantee to run a year and a day.

****

NATURAL BRIDGES

By Zeke Johnson, Custodian

I wish to thank you for your very kind letter dated January 23, also to submit my report for this month.

It seems I have more invitations to speak than I can fill---there are so many classes and groups of people that are interested in the scenic wonders of southern Utah and especially in the Four Corners country, and,

of course, Natural Bridges and the many caves and ancient buildings are very easy subjects for me to talk about. I hardly ever show up on the street but some one asks me about my work and the many interesting objects in the country. So I am intensely interested and am doing all in my power to create interest in the monument I represent.

****

BANDELIER E.C.W.

By H. B. Chase, Project Sup't.

The moving of CCC barracks No. 1 was completed this month and construction of the Museum building on the barracks site was started. To date all footings are in place and approximately one half of the walls are completed to a height of three feet.

Grading, and construction of the drainage structure included in the residence road project, is complete this date. Surfacing of this road will follow as soon as power and telephone cables are installed underground along the gutter line.

The trench for the telephone conduit leading from the floor to the canyon rim has been completed.

Tree and shrub planting has been carried on all month along the entrance road and vacant areas adjacent to the road.

Water line excavation to the 10,000-gallon water reservoir has been completed and excavation for the reservoir structure is about 75% complete. All materials for construction of this project have been delivered to the job and some preparation complete for hoisting the concrete.

A timber crew working in the Santa Fe Forest area west of the monument has cut and delivered necessary timber for vigas and lintels for the museum and Quarters No. 1.

The quarry crew has been in operation all month quarrying and shaping building stone for the museum, quarters, and other building projects.

A small crew has been working on carved signs for this monument and recently work has started on signs for other monuments in the Southwestern district.

****

HEADQUARTERS STUFF

BRANCH OF EDUCATION

By Robert H. Rose, Park Naturalist

Staff:

During the month of January, Junior Naturalist King and the writer

have been at headquarters except for a short field trip to Tucson to which later reference will be made. Junior Naturalist Caywood has been on relief duty throughout the month. During the latter part of December he left for Chaco Canyon where he remained until Custodian Miller's return early in January. From Chaco Canyon, Caywood went to Walnut Canyon to assume charge after the transfer of Ranger Paul Beaubien to Saguaro. Later sections of this report are given over to the reports of Messrs King and Caywood.

Museum:

During the month special attention has been given to the following problems relating to museum activities:

1. The Study Sketch of the proposed Tumacacori Museum was studied. Comments and suggestions were prepared and forwarded to the Museum Division and to the Field Division of Education.

2. Material for the Geology Case of the Bandelier Museum now under construction is being collected. This work involved writing ECW Regional Geologist Vandiver in regard to geologic cross sections and specimens; and the Field Division of Forestry for panaroma pictures desired in the exhibit.

3. About 110 negatives of photographs of the Kino Chain of Missions were classified, indexed and appropriately labeled and segregated for the making of slides and enlargements in the Berkeley Laboratories. It is hoped that we can make a picture album from one complete set of these pictures for use at Tumacacori National Monument. A second set of these enlargements will be kept for use in exhibits in the proposed museum plans for that monument while the third set will constitute file records here at Headquarters.

4. Lantern slide binding; acknowledgement of receipt of 23 botany presses from Field Division of Education and recording their distribution among monuments; attending to correspondence with Field Division of Education relative to lantern slide cabinets, slides, enlargements, case layouts for the Bandelier Museum, and other matters; and the forwarding to Berkeley of copy of a chart prepared by Jr. Naturalist Caywood for Chaco Canyon Museum, were among detailed work done.

Educational Contacts Records:

Early in the month each monument having personnel was contacted with reference to supplying estimates and records on visitor service for the months of the current travel year thus far passed. In each letter some of the special circumstances in handling visitor traffic at each monument were outlined. Replies have been received from practically all custodians

to date and tabulations are being prepared. The records for January, 1936, are being received with monthly reports. Once this matter is brought up to January 1 on the best estimates obtainable, then actual records will be available for each month thereafter. In the Southwestern Monuments Report for this month there will be found a tabulation for the travel year ending September 30, 1935. This tabulation indicates the possibilities in studying the records now coming in for the current travel year.

Memorandum to Custodians No. 95 was prepared and distributed. This communication calls attention to the difference between total travel and total educational contacts. It stressed the need for keeping closer check upon total monument travel. The Educational Contacts records will tell the story of visitor service. A file on educational contacts records has been sent to the Washington Office and to the Field Division of Education in order that Southwestern Monuments might receive recognition among all National Park Service units with respect to educational contacts work being done.

My daily memo book shows that from about an hour up to several hours were given to contacts work at Casa Grande on eleven different days. For the most part these were days during which monument personnel was short-handed due to days off of custodian and ranger.

Custodian Joyner of Devils Tower National Monument wrote concerning the methods of recording visitor service and asked for complete sets of forms and instructions. These were forwarded to him for whatever service they might be to him in working out a system of records for that monument.

Clerical Work and Personnel:

Considerable correspondence was handled with reference to temporary and permanent ranger applications and appointments. With the approach of the summer season more and more letters of application are received and answered.

Clerical:

During the month some progress has been made on preparation of preliminary estimates for Museum and Education for the Fiscal Year beginning July 1, 1938. This goes over into February as unfinished work. The matter of the Geographic Place Names report is also incomplete due to all material such as maps and pamphlets not yet being received.

A complete file has been organized in the naturalist office on educational contacts and monthly travel; a number of general information letters were handled during the month; and the complete set of prints of Grant's negatives of the Kino Chain of Missions taken during the recent Reconnaissance Survey, has been organized and indexed. Other detailed clerical work which will not be itemized was done.

Field Trips:

First, under Field Trips I might mention the trip made to Nogales, Sonora, on the occasion of a day off duty. Stopping in at Tumacacori, I had a good visit with Custodian Boundey and Ranger Evenstad. Mr. Boundey made a donation of certain interesting museum specimens to the Casa Grande Collection; educational contacts records and uniform regulations were discussed; and Mr. Boundey assured me that the album on Kino Missions pictures would be valuable in their daily contacts work.

On January 24 and 25 Junior Naturalist King and the writer attended a conference of CCC Educational Advisors and guests held at the Hotel Santa Rita in Tucson. The conference emphasized chiefly the ways and means of carrying out educational programs in the CCC Camps. Valuable information was obtained on how we might cooperate in furthering this program in camps under our supervision. Contacts made with the various educational advisors proved especially valuable to us in furthering the spirit of cooperation with them.

Special Lectures:

1. On Friday evening of January 31 the writer gave an illustrated talk of Arizona's National Monuments to the CCC boys of the Grazing Division Camp at Eloy, located about 20 miles southeast of Coolidge. Attendance, Approximately 200.

2. On the occasion of the conference in Tucson referred to under Field Trips just above, Mr. King and the writer each gave talks of about 15 minutes in length on work being done by the CCC Camps among the national monuments, attendance about 35. Mr. King also stressed the good work educational advisors of CCC Camps are in position to do in discouraging illegal digging for archeological materials.

Report of Jr. Naturalist Dale S. King:

Approximately 10 days on December Monthly Report.
Two days guide service at Casa Grande National Monument.
Two days at ECW educational conference at Tucson.
Slightly less than two days on correspondence.
Half day keeping bird banding files current.
One and one half days cataloguing library accessions.
One day irrigating newly planted trees.
Three days planning map case for proposed Bandelier Museum.
Half day conferring on accumulated museum plans for Bandelier, Tumacacori.
One day on advance January Report material.
About six days preparing comments of ranger guide service at Casa Grande.

Report of Jr. Naturalist Caywood:

Following is my report covering the month of January, 1936:

Field Work:

The entire month was spent in the field on relief duty at Chaco Canyon National Monument and Walnut Canyon National Monument.

While at Chaco, December 25 to January 6, relieving Custodian Cal Miller who was away on annual leave, I took quite a few pictures, under instructions from Headquarters. of the following ruins showing the condition of the walls:

1. Talus Ruins
2. Pueblo Bonito
3. Little Pueblo Alto
4. Hungo Pavi
5. Wijiji
6. Shabik'eshchee Village
7. Arroyo House

Although the walls of many of the unexcavated ruins are still standing they are in critical condition. Each summer rain and winter snow with its subsequent thaws and freezes levy their toll on the walls. Walls at Little Pueblo Alto, Wijiji and Hungo Pavi are still standing to a considerable height, but sections are in bad condition and in order to stand many more years some form of bracing and repair should be resorted to. Even while visiting the ruins and photographing them I often heard rocks fall from the walls and on the snow covered ground fresh fallen dirt and stones could be seen.

On the excavated ruins, Chettro Kettle, Talus Ruin and Pueblo Bonito, there is much needed repair work to be done. The repair work done by Neil M. Judd after excavating Pueblo Bonito has held up very well considering the severe attacks of weather, but the time has come when the weaknesses in these repairs are being brought out daily, especially during the winter months. The chief causes of ruins disintegretion at Pueblo Bonito would come under the following headings:

1. Undermining of walls at floor levels and ceiling or beam hole levels.

2. Improper or no drainage.

3. Cracking of cement capping which allows water to seep into the walls, either washing out the mortar or freezing and bulging the walls, or both, with the result that the wall falls out from beneath the capping and the capping then caves in.

4. Uncapped walls begin to lean and weather conditions soon cause them to fall.

The other excavated ruins and also the unexcavated ruins are gradually falling into a more ruinous state. In Chettro Kettle the repaired walls in the deep excavation done last summer have begun to crack from the pressure of the tremendous weight above. At Talus Ruin, which was partially excavated during the past two summers, 1934 and 1935, walls have fallen since last summer's work.

The solution to these problems would be of several classes. The most important at the present time would be to repair and brace the excavated walls at both Pueblo Bonito and Chettro Kettle. If this is not possible, it might be well to spend a smaller sum and fill in all of the excavated rooms and brace the standing walls with earth. This, of course, would detract from the features of the ruins and leave only smaller sections of standing wall, but in the end would preserve the ruins for a period until repair work could be done. Another important way to reduce the tremendous depreciation in the ruins would be to forbid further excavation of any kind unless the parties excavating also have sufficient money to repair the walls and preserve the features.

Those who have not had the experiences of excavating and the thrill of finding the lost treasures of these old people have missed much. Those who have excavated know the thrill and satisfaction of finding and properly removing museum pieces, and discovering the kind of houses that were used for living and ceremonial purposes. To those who have excavated comes the feeling of sadness and shock to see what was only recently a beautiful piece of masonry which had stood buried for hundreds of years now nothing but a pile of rocks and dirt. Such walls can never be replaced.

Lewis McKinney was very nice in offering to take me to many of the out-of-the-way ruins, including Wijiji, Shabik'eschee Village and Arroyo House. Together we climbed Fajada Butte where I saw the names of Richard Wetherill and Ales Hrdlicka inscribed there in 1899. It was a very windy day and after finally reaching the top my "beaver board" hat blew off over the edge of the cliff. I will say this for those hats, that although you can't keep them on your head on a windy day they stand a lot of punishment, for mine only had a few nicks in it when we finally found it a couple of ledges below the top. There was plenty of ice and snow on the Butte that day and climbing was not so good, but McKinney finally persuaded me to climb up the last crumbling sandstone ledge that had considerable ice on it and quite a drop below. We did succeed, however, in finding a better way down.

H. E. Williams, fence inspector, was kind enough to show me the bad places around Chettro Kettle, Talus Ruin and Pueblo Bonito. When Cal returned he took me around to more of the bad walls and places where there is no drainage. All of these places were photographed and sent into Headquarters.

During one of the snow storms while there I labeled the four masonry charts which were already in the museum with a heading of "Chaco Masonry" and worked up "The History of Chaco Canyon" which I sent into Headquarters for approval.

Visitors were certainly among the missing during my two weeks' stay. Much snow and the condition of the roads prevented travel unless absolutely necessary.

Birds were also scarce, but I noted the following species: Desert Horned Lark, Rocky Mountain Woodpecker, White-rumped Shrike and the Shufeldt Junco.

We left Chaco Canyon after seeing Cal, Mrs. Miller and the four children safely back to their home roost on January 7 and arrived at Walnut Canyon January 8. We certainly enjoyed our stay at Chaco and hope we are fortunate enough to return there again.

Everything at Walnut was found in good condition. The cistern was being cleaned the day we arrived and was finished the next. So far there haven't been any storms to fill it up again. I am afraid we have outclassed Bud at Canyon de Chelly with running water 'cause we have to run four or five miles after ours.

There had evidently been quite a storm here shortly before our arrival as there was ice and snow in evidence. Ice and snow on the walk leading up to the cabin had to be cleaned off with pick and shovel. One of the large signs in front of the cabin had partially blown down, but I've fixed that up now, so let it blow.

I made a thorough inspection trip of the ruins on the monument and found that no vandalism had been perpetrated.

After feeding the birds for a week the traps were set with the following results to date: 2 Rocky Mountain Nuthatches banded, 1 Mearns Woodpecker banded, 1 Rednaped Sapsucker banded, 3 redbacked Juncos banded, 1 Pigmy Nuthatch banded, and 1 Gray Titmouse banded. We have also had 28 repeats. Winnie is becoming quite bird-minded and dones most of the banding. One afternoon she had both the Rednaped Sapsucker and the Mearns Woodpecker in the one Two-Compartment Trap that is being used. When I came home from the Island she was so excited she could hardly tell me about it.

We have seen one herd of 19 deer on the monument including two bucks. Individual deer and small herds are seen rather frequently.

For travel and further details at Walnut Canyon see the Monthly Report for this Monument.

SOUTHWESTERN BIRD BANDING TOTALS

Species	Bandelier		Casa Grande		Chaco		Montezuma		Navajo		Pipe Spg.		Walnut		Wupatki		Total
	Prior	Jan	Prior	Jan.	Prior	Jan.	Prior	Jan	Prior	Jan	Prior	Jan	Prior	Jan	Prior	Jan.	
Bluebird,Ch-b													215				215
Crossbill,Bend.													17				17
Chickadee,Mtn.									6				3				9
Creeper, R.M.		2															2
Dove,W.Mourn.			2														2
Finch, House			76														76
Flyc't'r,Ar.-c			2														2
Gldfnch,Gr-bkd													2				2
Jay, Long-cr.	8																8
Jay,Woodhouse		1							6								7
Junco,Gr-hded		16							8								24
Junco,Mntana									9								9
Junco,Pnk-sded	4	1															5
Junco,Rd-bcked	21	4							2				10	3			40
Junco,Shufeldt	4	2							13				5				24
Mckngbird, W.			1	1													2
Nuthatch,Pyg.		12											23	1			36
Nuthatch,R.M.		1											4	2			7
Owl, W.Horned			1														1
Phoebe, Say			17														17
Quail,Gambel			10	11			5										26

Species	Bandelier		CasaGrande		Chaco		Montezuma		Navajo		Pipe Spg.		Walnut		Wupatki		Total
Roadrunner			3														3
Robin,Western													7				7
Spscker,R-nap.													3	1			4
Spscker, R.M.													2				2
Siskin, Pine													1				1
Solitaire,Town.													7				7
Sparrow,Gambel			46	11													57
Sparrow, W-crn.									6								6
Swallow, Ro-wg			3														3
Thrasher,Bend.			3														3
Thrasher,Criss.			7														7
Thrasher,Sage															2		2
Titmouse,Gray														1			1
Towhee,Gr-tail															1		1
Woodpecker,Gila			6														6
Wdpker,RM Hairy		1															1
Wdpkr, Mearns													8	1			9
Wren, Cactus			27	1													28
SUB-TOTAL	37	40	204	24	0	0	5	0	50	0	0	0	307	9	3	0	
TOTAL		77		228		0		5		50		0		316		3	679

STATISTICAL SUMMERY OF EDUCATIONAL CONTACTS FOR JANUARY 1936

SOUTHWESTERN NAT'L. MONUMENTS

MONUMENT	EMPLOYEES		GUIDED TRIPS					MUSEUM LECTURES					MUSEUM UNATT'D		LECTURES OUTSIDE		MISCELLAN.		TOTAL	TOTAL
	PERM.	TEMP.	NO.	ATT.	TIME	AV. ATT	AV. TIME	NO	ATT	TIME	AV. ATT	AV. TIME	NO	ATT.	NO:	ATT.	NO.	ATT.	CONTACTS	TRAVEL
ARCHES	1/165																		(No Report)	
ASTEC	2		45	172	1428	3.8	32	48	178	847	3.7	18	1	3	1	87			533	225
BANDELIER	1		19	55	1040	3.0	55												55	254
DECKILLY	1		2	5	120	2.5	60								1	350			355	10
GRELLIN	1/165		3	33	[illegible]	[illegible]	[illegible]												33	350
J.S. GR.	2	1	337	2338	[illegible]	3.7	[illegible]	283	1803	4324	6.4	15.3	127	10[illegible]					5[illegible]6	3570
[illegible]CO	1		3	10	370	3.3	125	1	2	27	2.0	20							12	280
CHIRIC.H.	0	0																	0	250
EL MORRO	1/5		1	3		3													3	4
GIL. CLIF	0																		0	0
GR.N.CUT	1		12	88	425	7.3	36	2	42	35	21	18							130	287
HOV.N.MT	0																		0	0
MONTEZUMA	2		77	407	3005	5.3	39	103	510	2209	5.1	22							917	696
NAT.BRID.	0	0													12	1068			1,080	N) REPT
NAVAJO	1/165																		NO REPORT)	
PIPE SPG	1-Lat.		16	79	465	5	29												79	307
RAINBOW	0																		0	0
S.C.M.RO		1		200															200	800
SUNSET	0		3	26	69	3	8												26	80
TONTO		1	93	536	6235	6	67	84	407	1715	5	20							973	751
TUM.C.C.	2		174	1379	9876	8	57												1,379	1,607
WALNUT		1	24	37	1455	4	61										10	19	116	285
WHITE SND	1/5		417	1609	5447	4	13										1	400	2,009	4,402
WUP.TKI		1	2	26	350	3	39								1	35	1	2	63	106
YUCCA H.	0	0																	0	0
*															3	250			250	
	12.5	5	1232	7663	4283			461	3008*				128	1072	18	1883	12	421	14,047	14,044

9220

*Lectures by Headquarters Personnel.

January 1936 educational contacts tabulations for Southwestern Monuments will be found on the previous page. Some comments and explanations are in order since this is the first appearance of the monthly tabulations. Reclassification of a few individual entries is necessary but totals will not be changed. Some items such as the special talks by Custodians have not been included but for February a revised tabulation will be published.

This matter of defining "educational contacts" has come up in a few of the field reports. Regularly organized guided field and museum trips present no difficulty since educational contacts under each heading are merely the total number of visitors who received each type of service. Other circumstances present greater difficulties, but an illustration will clarify some points. Suppose that a ranger stationed at Chiricahua knew nothing of the history, geology and botany of the monument and that he occupied his time checking cars; informing people where to camp; telling people the distance and condition of the road to Massai Point; directing them over the best routes to nearby cities; and in performing other services to visitors not related to a knowledge of the history and science of the region. This ranger would report TRAVEL, but he is not justified in reporting all visitors under EDUCATIONAL CONTACTS. Then, the question arises as to just what we are going to do about reporting this vast amount of general service related to assisting visitors? In this case it is not the educational contacts methods that are weak; it is the methods of reporting all of these general activities that need improvement.

Now, consider the Chiricahua ranger who performs all of the above types of services not classed under "educational contacts" and who, in addition, succeeds in getting visitors out of their cars where they can see interesting pictures, specimens and other materials the ranger has assembled. These stimulate visitors to ask questions and he spends anywhere from five minutes to a half hour, telling visitors where to obtain finest views; something of the processes of Nature that fashioned the region; and in calling attention to, and in interpretation of, special exhibits visitors can see along the roads and trails. At once we see the services this ranger gives are dependent upon his thorough knowledge of Chiricahua. He might interest people still further in the Indian history in which the Monument prominently figures. There is no question here but what this ranger is performing educational service and he should report as educational contacts the total number of people to whom he has given this type of service. The problem here is not whether this service falls under educational contacts but lies in how to classify it in tabulations. There are of course borderline cases in which no set rules can be laid down and where individual judgment of the field men must be relied upon just as a man is expected to exercise judgment in reporting his other monthly activities under their proper headings.

BRANCH OF ENGINEERING

By J. H. Tovrea

Mr. J. H. Diehl, Park Engineer, returning from Field Headquarters, San Francisco, spent a few days at Southwestern Monuments' Headquarters. He then went to Carlsbad Cavern National Park and spent the balance of the month supervising construction and surveys. He also had some maps and estimates made for the Resettlement work at White Sands National Monument. At the end of the month he left Carlsbad for Platt.

Transitman Andrew Clark and crew were at Carlsbad Caverns National Park for the month making topographical surveys for proposed trail work.

Chief Engineering Aide J. H. Tovrea was at Headquarters for the month on map work and office detail.

****

CLOSING

The new year has taken a flying start, Chief, and we are pretty well satisfied with it thus far. We got the breaks in the Budget and, on the last reports, we were still riding the crest of the waves in the appropriation bill. It certainly looks like we are going to be in a position to deliver better service next year to an increased number of visitors than we have ever been able to give thus far, so why shouldn't we be elated?

You have noted, no doubt, in the tabulation at the head of the condensed report, the increased run of visitors and we take it this is an indication of increased business during the spring and summer season.

For the first time we are trying to build the Condensed Report on the standard system so that, should you ever want to do so, you can make a quick reference to any portion of it; or does anybody ever want to make a quick reference to a Superintendent's Monthly Report? If you like it this way we will continue it, only we will run our travel at the head of the report instead of down in the body where it might get lost. After all, we have a feeling that the visitor figures make up one of the most important sections of any report and should have the right-of-way.

You will note on the Personnel Page that Donald Erskine has joined on with us and is to be at Walnut Canyon National Monument after a little breaking-in period at headquarters.

Al Bicknell, whose native heath is up at Craters of the Moon National Monument, is talking to visitors at Casa Grande like an old time bone-digger, but I suppose when spring opens up he will be wanting to go back to the "finest National Monument in the system!"

I wish you would call the attention of Mr. Tolson and Mr. Vint to

the El Morro Field Report in the matter of the snow on the north side of the Rock and the south side being warm and sunny and dry in most places. Possibly we had better call a conference up there on the north side of the Rock about the middle of February to pick the site for the administration area. We might even make it a two or three day conference and see who volunteered to camp on the north side of the Rock. Of course, if it were necessary for the prevention of vandalism or any other good reason, we would not hesitate to ask our personnel to live on the disagreeable side of the Rock, but there isn't any particular reason why he should be asked to endure two or three months more winter when, from the administrative standpoint, the comfortable side of the cliff would serve just as well.

Those are interesting nature notes in the Bandelier field report. And of course it would be Betty Jackson who discovered a new dwelling in Bandelier! You will remember it was she who last month walked into the Montezuma Castle and found a filled doorway which Jack and I had been overlooking all these years when we almost called the Castle home because we worked around in it so much. Why couldn't she come along in the good old days before Chief Clerks when I was keeping my own filing system? She would have been invaluable as a finder of lost papers.

Gran Quivira did well, I think, seeing how far it is off the main travelled road, to draw 287 visitors in January. If you had driven in over that last 27 miles in bad weather you would understand how badly those people wanted to see ruins.

We are getting our first authentic information on January visitors at Walnut Canyon and some interesting points are developing. The H.C.W.P. sent in an interesting letter the other day dealing with the daily life at Walnut and containing some nature notes we are going to run in the next issue of the Broadcast.

I want particularly to call your attention to the fine cooperation of the Indian Service noted in the Canyon de Chelly field report. Let me add my word that we have found this same willing cooperation over at the Central Agency of the Navajo Indian reservation in the several times we have had to call upon them.

The White Sands report raises a very pertinent question: "What is a contact?" To tell the truth we have had a lot of doubt along that line ourselves. We wish the Educational Division would give us the major points of information on what constitutes a contact and then maybe we could make some ground rules to fit some of the special cases that occur in our monuments.

Note that interesting observation in the Saguaro field report on the differences of visitors between Walnut and Saguaro.

The Tumacacori field report speaks of Mr. Tovrea and myself visiting

the mission but doesn't tell how much fun we had climbing around over the top of the tower, the dome of the sanctuary and so on, nor of the fireworks caused by the explosion of archaeological, architectural and historical theories dealing with the Mission.

The Wupatki report is up to the usual good standard, and you will please note the reference to the Navajo Arts and Crafts Exhibit. I think this is a splendid idea.

Tonto travel is booming. A typographical error makes the latest car arrive at 7:00A.M. instead of 7:00 P.M.

We are glad to see by the Chaco field report that the fence project is finished. It is a good piece of work well done.

I wouldn't want to pour any oil upon the troubled flames by mentioning it in public, but you will note that Aztec now advances from "The finest Monument in the park system" to, "one of the outstanding wonders of the world." Page Chaco Canyon.

We are hoping great things for the E.C.W. geological report for Chiricahua. If it is detailed enough, we would like to publish it as one in the series of Special Reports we are getting out of this office.

I thought when I saw those hearty remarks about Montezuma Castle attendance going out that we would get a come-back and you will notice it in this month's field report.

Here in the office we all had a laugh at the Pipe Spring statement that his monthly report was always a pleasure - after it was in the mail! So say we all of us!

And you can't hold a man like Zeke Johnson down by snowing his monument in the winter time! He just goes where people are and talks to them as you will note by his report.

The two E.C.W. camps have been doing good work as usual. In the expressive phrase of our friend 'Gene Baird, Bill and Hub are "a pair to draw to and beat the world."

Taking it bye and large we have no complaints to make about January; if our desert gods stay with us through the next eleven months as well as they have the past one, we will have our plans well along toward a much improved service to the American Public.

Cordially,

Frank Pinkley

Superintendent.


THE
SUPPLEMENT
TO THE
MONTHLY REPORT
FOR
THE
SOUTHWESTERN
MONUMENTS
WHERE
WE ARE SERIOUS,
—BUT NOT TOO SERIOUS



REPORT ON MISSION SAN JOSE DE TUMACACORI

By J. H. Tovrea

When we pass through the great arched doorway of the old Mission San Jose de Tumacacori, it is usually only a matter of a few minutes before we start wondering what it was like before nature and vandalism destroyed so much of it. Even those who are not particularly interested in old missions cannot help wondering what the ruined altars were like years ago. Perhaps some carry away with them a mental picture of the unfinished bell tower and vaguely try to visualize what it might have been. Those of us who visit the structure often enough find that this wondering gets in the blood and becomes a sort of mild mania. If, eventually, we find ourselves staying awake nights pondering over little flakes of plaster which have different textures, or faded dabs of paint which once might have been parts of intricate and vivid designs, we will begin to find answers for some of the whats and whys.

Last fall the National Park Service decided that answers or clues to unravel some of Tumacacori's architectural problems might be found by a survey of the twenty-odd missions in Sonora, Mexico, which belonged to the same chain as our own Tumacacori. The thought brought action, for a party of six men was sent into Mexico to gather as much data and material as possible for museum exhibits, historical research, and architectural detail. The time was limited to three weeks, so the party had to work fast. A lot of the time was consumed in travel between the missions, as the roads were poor and there was a certain amount of official clearance to be obtained at each site. The party was composed of two architects and an archeologist-historian from San Francisco, a photographer from Washington, D. C.,and a geologist and myself from Southwestern Monuments Headquarters. The party obtained some valuable data in the form of measured plans and sections of the better preserved missions, but the time was so limited that many of the details could not be measured though all were photographed. There is no doubt that a wealth of museum material was obtained and the expedition was, I believe, a successful one.

My interest in the trip was concentrated on what could be found that would relate to Tumacacori in the way of restoring in picture form some of her lost details.

Some eighteen years ago, Superintendent Frank Pinkley of the National Park Service started wondering about Tumacacori and set to work putting pieces of the puzzle together. His job was harder than ours because he had to start at the beginning. Now, with parts of the problem solved, it is easier for us to work out other parts. Some of the answers to various parts of Tumacacori's problem outlined in this report, are accompanied with substantial and logical proof. Others are

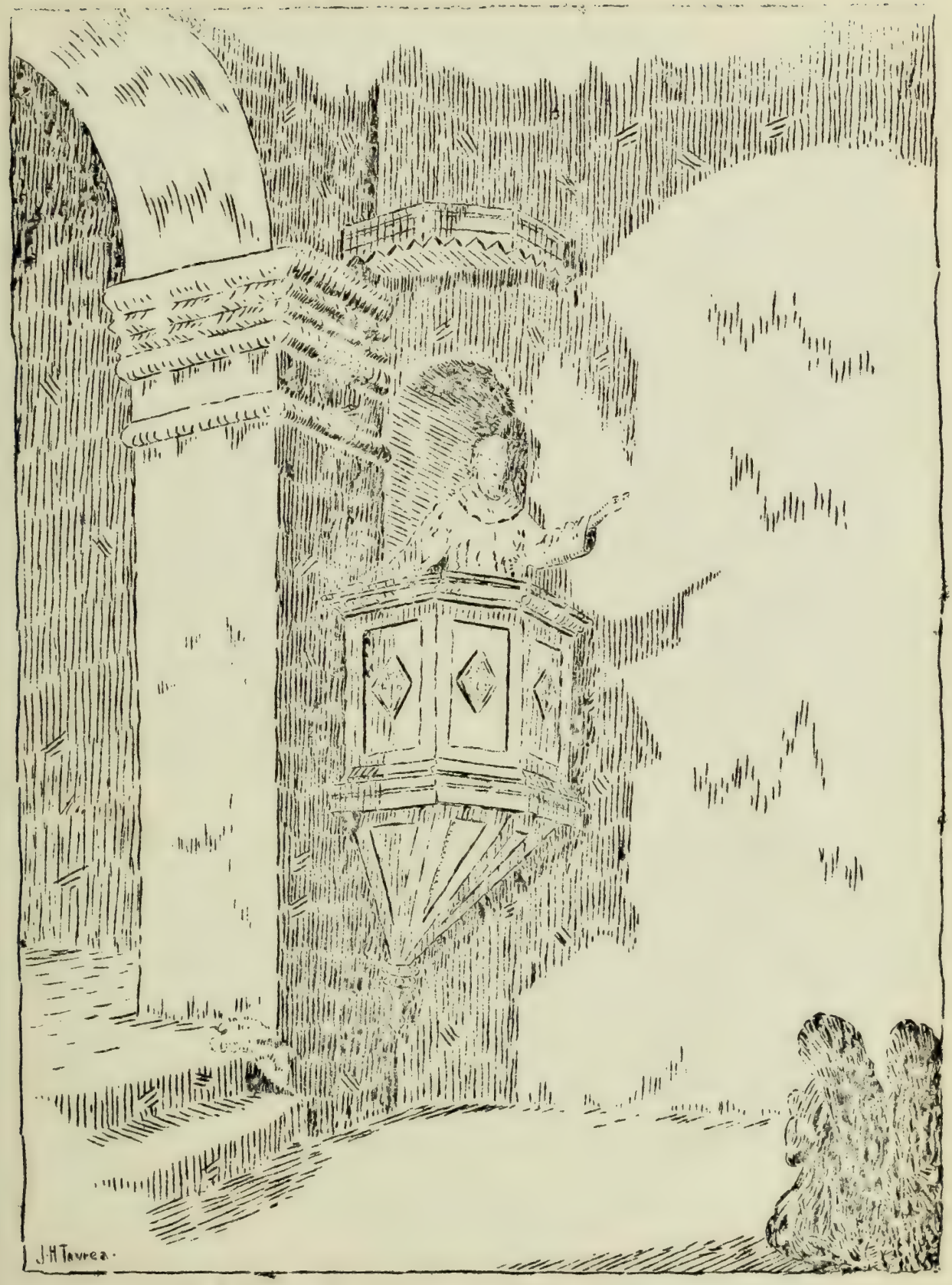
based on comparative observations of the other missions in the chain; and still others can be boiled down to the very best and latest guess.

I found that all the missions in the chain, that we visited, were quite radically different from one another with the exception of Caborca, which is practically a twin of the Mission San Xavier near Tucson, Arizona. If any of the missions is at all like Tumacacori, it is probably San Ignacio, and it was from it that I gathered data which helped conceive a restoration of Tumacacori's side altars, pulpit, choir loft rail and balustrade. It also gave me a mental picture of what Tumacacori's interior looked like when it was complete with choir loft and altars. It verified in my mind Superintendent Pinkley's idea that by restoring Tumacacori's choir loft, illusions of greater height and size of the nave would be created and the entire picture would be more in keeping with what the builders meant it to be. Without these illusions the nave is out of focus, and when we say to the visitor as he enters the door, "Look--this is the nave which the padres built over a hundred years ago," we are showing him a distorted picture. The padres would have had the visitor view the nave thru the arched opening that upheld the front end of the choir loft; for thru this archway the room would appear longer than it actually was, and, as he walked forward and looked up, his memory of the low ceiling of the balcony loft would make the ceiling of the nave seem higher by comparison.

The missions as a whole made me fool that since the buildings were designed to impart a feeling of mystery and sanctity, so should such a feeling be re-created in Tumacacori, as nearly as would be practicable. This could be done in part by restoring some of the altars complete to the image in the niche. When the visitor enters San Xavier he tiptoes and whispers and is doubly impressed by what he sees. At the present time, the interior of Tumacacori could be mistaken for the interior of an old banquet hall, a fortress or even a storage room. A little restoration here and there would make it impress the visitor that it was the interior of a place of worship and he would be getting a truer picture of the mission.

PULPIT RESTORATION

When I entered San Ignacio, the first detail to catch my eye was the pulpit. The eye is drawn to it immediately because it is a spot of color against the plain grey-white wall. In the dim, shadowy light of the nave the bright colors of this pulpit are softened so that they blend together and assume a velvet-like texture. Indians like bright colors and would no doubt concentrate their attention on this particular spot when the padre was addressing them. All that was left of the Tumacacori pulpit at the time it was decided to restore it, were a few marks on the plaster wall. These marks proved two things; 1. That the floor beams projected at right angles from the two walls behind the pulpit and, 2. That three and one-half feet below the floor level, in



·PLATE·2-PULPIT·RESTORATION·

the corner formed by the intersection of the two main walls, was a mark which indicated the presence of an ornament which might have terminated the point of an inverted pyramidal corbel that supported the floor of the pulpit. With this scanty evidence to work from a square pulpit floor was constructed with the corbel below. This construction was then plastered over. If a pulpit of this square shape were used the speaker could not have faced his listeners in a graceful manner unless he faced directly south where he would be looking along the line of the east wall, or directly west where he would be looking at a wall seventeen feet away and not at his listeners.

It would seem that the ideal horizontal section of a pulpit for this particular situation would be a quarter round, which would permit the speaker to face any direction in the space of ninety degrees. For the purpose of ornamentation, however, this section would not be very satisfactory, as well as being a difficult one to build out of wood. All of the pulpits which we studied in the other missions were some portion of an octagon, depending upon their position. This octagon shape gave the same effect as a circle, was easier to construct, and when ornamented was more pleasing to the eye. The one at San Ignacio looked so appropriate for Tumacacori, if modified a bit, that I made a rough water color of it. Using this as a model, I have made a restoration drawing of a pulpit for Tumacacori. (Plate 2). This pulpit would meet the requirements established by the marks left on the walls by the original pulpit and would, I believe, resemble the original very closely. The construction would be of wood and the colors similar to those of San Ignacio's pulpit. If this pulpit were restored, I believe it would create a pleasing contrast to the present drab interior.

ALTAR RESTORATION

Tumacacori had seven altars--three on each side of the nave and the high altar in the sanctuary. One can imagine how impressive the interior of this old mission must have been when all these altars stood complete, each one enshrining the image of a saint. Could not this picture be more clearly imagined by the visitor if one of these altars were completely restored? The possibilities of such a restoration are shown by the drawing in Plate 3. This particular altar is the first side altar on the left as we enter the building. All that remains of it now is the base, and the lower portion of the altar proper. The flat top has been restored. Existing evidence to support the accuracy of this restoration drawing is in the form of marks on the plaster wall showing the outline of the gabled moulding that frames the altar background, and the small remaining fragments of one of the columns, and one end of the lintle.

The ornamental designs on the column and lintle are painted and were suggested by the designs on other altars of the chain. At least two of the old carved wood images, which are now at San Xavier, belonged

at one time to Tumacacori. I would suggest that models of these images be made, full size, colored true to the originals and restored to the altar niches at Tumacacori. One of these image models in the niche of the restored side altar would make it a complete restoration.

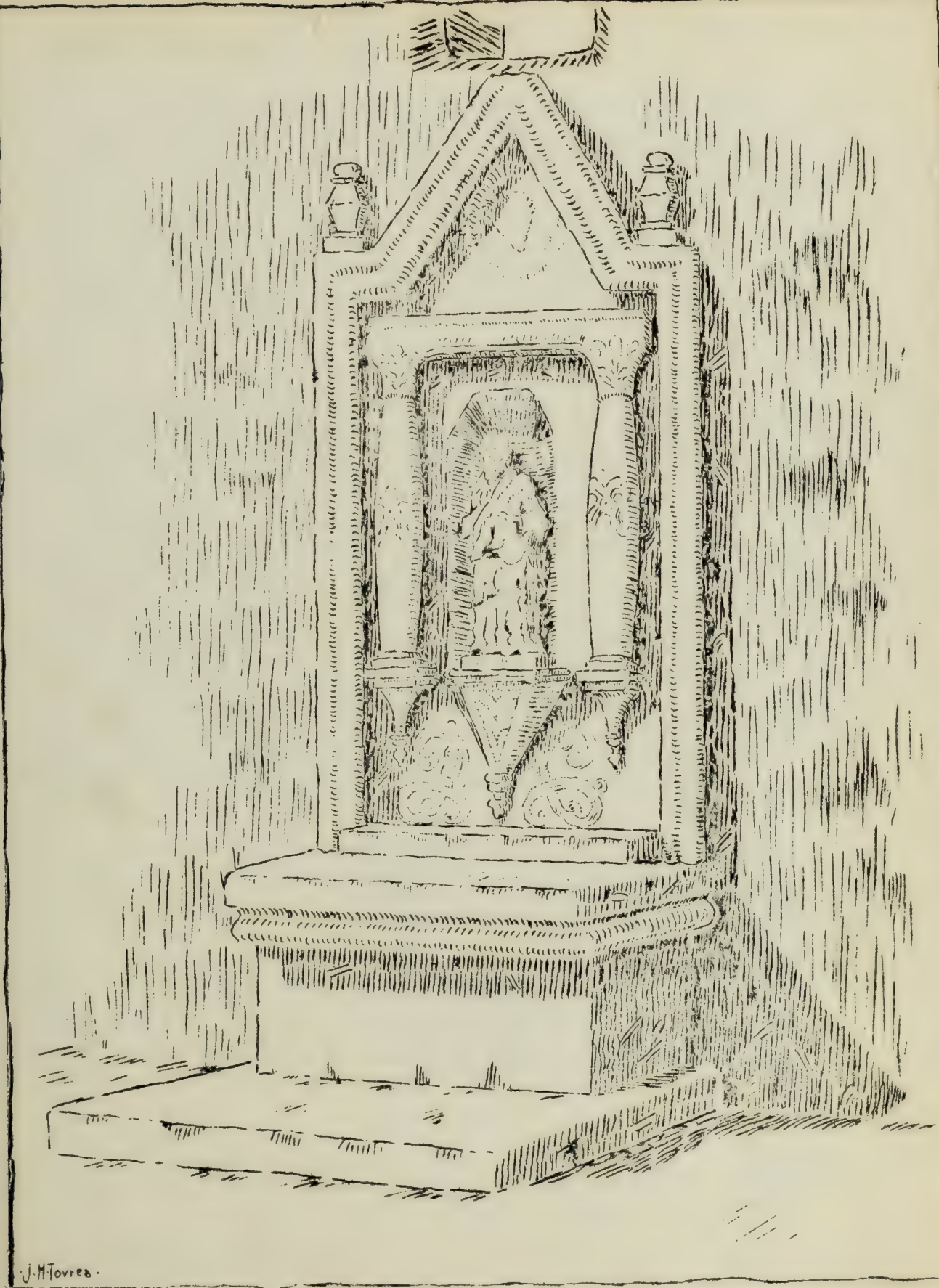
CHOIR LOFT RESTORATION

A complete restoration of the choir loft has been advocated for several good reasons--the primary one being that of improving the perspective view on entering the building. The arch support at the front of the loft can be easily and accurately restored from photographs of the original arch. The floor we must assume to be of burned brick, as are the loft floors of most of the other missions. The railing and balustrade must be copied also from existing ones in the other missions. Detailed drawings of these existing balustrades were made on the mission trip and are filed ready to use in the event this restoration is ever attempted.

A DISCUSSION OF THE ORIGINAL PLANS

Records show that three buildings were constructed at Tumacacori at different periods, for the purpose of holding religious services. Whether these three missions were three distinct buildings or two buildings, one of which was remodeled and enlarged to make the third, is a question for debate. Last winter, under the competent supervision of Mr. Paul Beaubien, Archeologist, the area east of the present mission was excavated and a number of foundation walls and floors were uncovered and mapped. One rectangular shaped set of foundations, in particular, could have been those of a small church, and is considered by some to be the foundation of the second church at Tumacacori. At one end of the rectangle the foundation walls seem to offset inward for a distance equal to the breadth of the foundation to form what might have been a sanctuary. However, the fact that at the point of offset the two walls are joined together by just the meeting of their respective corners, leads me to believe that they were the foundations of two different buildings constructed at different periods; and I do not think that these foundations represent those of a church, though it is possible.

On the other hand, there are several good arguments which would indicate that the present building has been remodeled and enlarged. Briefly, they are, the presence of plastered foundation walls on each side of the nave--which would indicate that at one time there was an altar alcove on each side of the nave. The opening into these alcoves is clearly outlined by the unbonded adobe brick. The average height of these cracks is eight feet. Excavation has shown also that there were foundation walls crossing the nave just in front of the sanctuary arch and behind what was the choir loft arch. This would indicate that the nave at one time might have been confined within these limits or, at least, was of a different plan, even though the length and width were



·PLATE·3·SIDE·ALTAR·RESTORED·

the same. Let us assume, then, that the plan of the church was radically altered at one time. Now, how about the elevations of the side and end walls of the nave? No one has committed himself, to my knowledge, as to what change might have taken place here. I have always wondered about the two foot offset on the outside of the nave side walls. It has been a question in my mind for a long time whether this offset, caused by changing the wall thickness from approximately five feet to three feet, was in the original plans of the building; or if it indicated an addition which raised the height of the building; or was a change in plan after the offset point was reached.

VAULTED ROOF?

Referring to Plate 5, let us study the wall section. If this section were designed in the original plans of the building, a section of this shape could have been designed for only one purpose; namely, that of supporting a barrel vaulted roof. If the wall had been designed primarily to support a flat roof, the designer would surely have used a three-foot wall section all the way up. It is well to bear in mind that when the present roof was restored there was no evidence that a vaulted roof had covered the walls; but, at the same time, it might have been the intention of the designers to use the flat roof temporarily and eventually replace it with the highly favored barrel vault.* It is a well known fact that the padres were clever architects and that when they built a vaulted roof it was well designed and did not fail through structural weakness. In fact, they had a tendency to over-design; that is, to construct their walls even a bit thicker than was necessary in order to be sure that their buildings would not fail. Churches in Mexico which they built four hundred years ago (some of which would hold a half dozen of the Kino missions), are still in use today and are structurally sound.

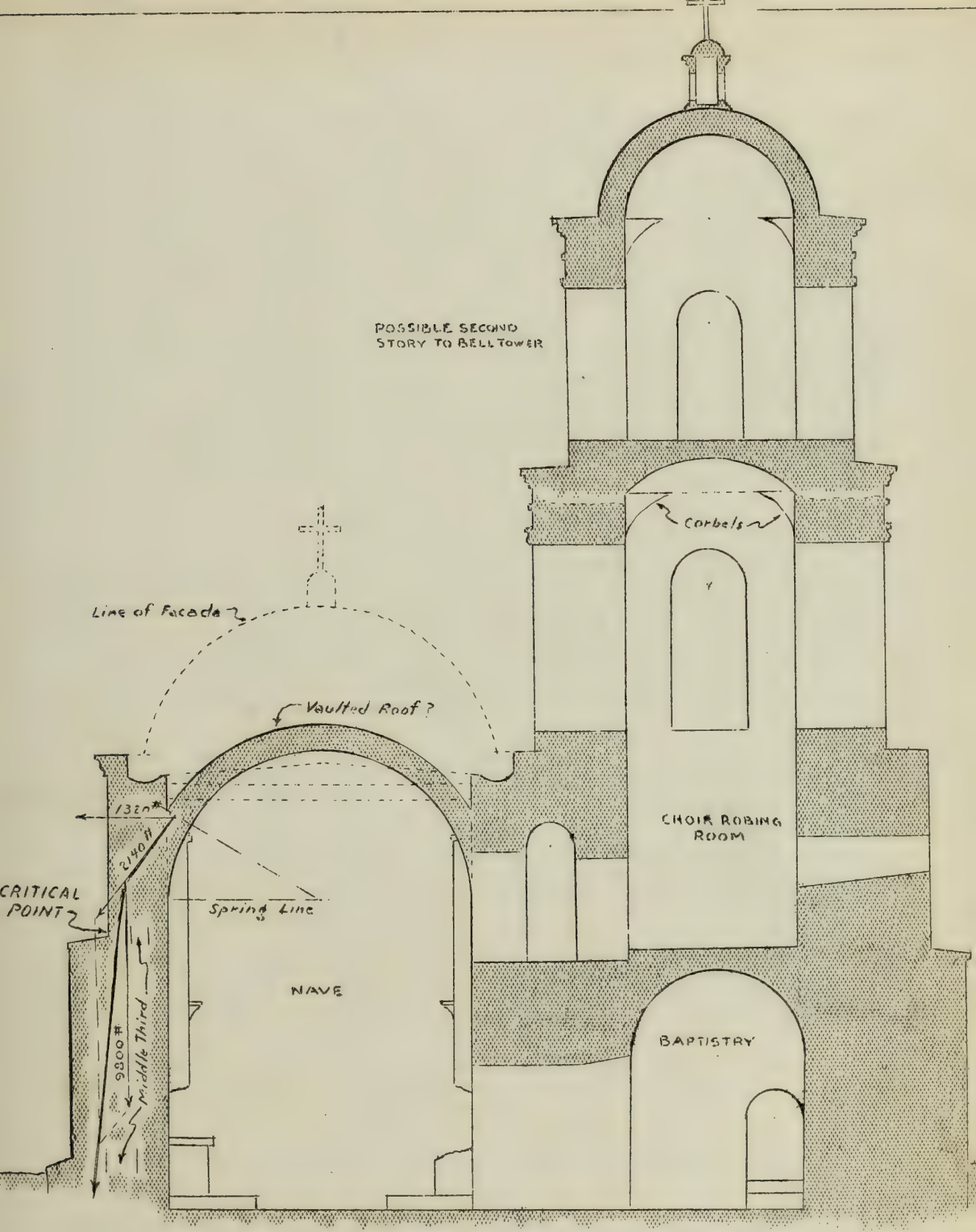
Referring again to Plate 5, let us actually determine whether this section would support a vaulted roof. Since the width of the nave is the same as that of the sacristry, it can be assumed that the proposed vault for the nave would have the same thickness as that of the one that now exists over the sacristry. The spring line of the intrados of the arch is a point fixed by the fact that the proposed vault could not be higher than the north wall supporting the dome over the sanctuary. The stress diagram shows a resultant thrust of 2140 pounds per linial foot, acting at an angle of 38 degrees from the face of the vertical wall. The center of gravity of the wall section can be calculated to be 2.42 feet from the vertical face of the wall and the weight of the

* This change was actually made at San Ignacio but, due to lack of foresight in making the walls thick enough at the time of construction, great outside buttresses had to be built to brace the nave walls.

wall section creates a force downward of 9,800 pounds per linial foot through the point of the center of gravity. The resultant force between the thrust of the arch and the weight of the wall section completes the line which the thrust of our proposed vault would travel. This line of pressure is the heavy line shown on the wall section. It will be noted that the wall section is divided into thirds at the base of each of the two different wall thicknesses. When a wall section is designed to carry an arch, it is so designed that the line of thrust always stays within the middle third of the wall section. If it runs outside of this middle third, the section is considered unsafe and apt to fail. It will be noted that the thrust line of our proposed arch runs considerably outside of the middle third, both at the offset point and at the base of the section--which are the two critical points. We know then that if a barrel vaulted roof were built there would be great danger of the side walls failing.* Therefore, since the padres were efficient designers and even tended to over-design, I believe we can safely say that the two-foot offset was not a part of the original plans of the building. That eliminates one theory and leaves us two; namely, that the plans were changed when the offset point was reached, or, the portion of the building above the offset was an addition to the building. I believe that the five-foot section of wall was started with the idea of using the vaulted roof--otherwise a narrower wall section would have been used. I believe that it was intended to carry this thick wall up to the point where the spring line of the arch we figured starts. When the point was reached which is now the offset point of the walls, plans were changed.1.There could be several periods when Tumacacori was abandoned by the padres due to Indian attacks at Tumacacori and other missions farther south. 2. It is possible also that since the Indian labor was not particularly skilled and was very slow, the padres decided to use a flat roof instead of a vaulted one, and so the wall was made narrower from the offset point on up. It will be noted that on each side of the main entrance there are buttress-like columns. (Plate4). It seems logical to assume that they were used to support the back part of the choir loft. However, if this were true, they would be superfluous construction; as the choir loft beams would receive their proper support and bearing in the front wall of the building, and a beam under them would not be necessary. I puzzled over these peculiar columns for a long time before an apparently simple answer presented itself to account for them. When the plans

*This does not, however, rule out the possibility of the intention to use a lighter vaulted roof than the one figured here. It has been my theory that, for lack of funds, they could not erect a barrel vault at the time but designed the walls so the flat roof could later be removed and the barrel vault substituted with the least amount of trouble.

Mr. Tovrea however tells me a thinner section would probably be dangerous, due to the fact that the line of pressure could more easily fall outside of the middle third in a thinner section. - Frank Pinkley



·PLATE·5·

·SECTION·THRU·MISSION·

1/8" Scale

were changed and it was decided to use the flat roof which could be taken care of by a three-foot wall, the designer could easily take care of the offset on the side walls of the nave by putting it on the outside of the building where the break would make the elevation even more pleasing. But the front of the building, the main facade, would be practically ruined if the offset ran across it and divided it into two elements. So in this place he put the offset on the inside of the building where it could be nicely concealed by the choir loft floor. Any offset on the inside of the nave that could be seen would cut down the apparent height of the ceiling. There is nothing much harder to do than to make a radical change in a good set of plans and still keep them good. This is especially true when the building planned is half built. Though Tumacacori is hardly an architectural jewel, it is an interesting building with many pleasing features. The fact that the building is still quite presentable should reflect even more credit to the padre architects.

THE UNFINISHED BELL TOWER

The mystery of the unfinished bell tower will probably always keep us guessing, but the more we think about it and compare it with the bell towers of the other missions of the chain, the more accurate our guessing becomes. Why it wasn't finished has been boiled down to about three or four stock answers which can be found in almost any Mission book. It is the question what would the bell tower have looked like if it had been finished, that we will try to answer.

There are two schools of thought regarding this question. School No. 1 contends that if the tower had been finished it would have consisted of the present single story above the roof line of the nave, topped with a dome, lantern and cross. School No. 2 believes that it was intended to add another story to the present one, making the tower two stories above the roof line of the nave, and on top of the second story a dome, lantern and cross. The second story would be smaller both in height and outside measurement than the present first story. At one time I was a somewhat doubtful School No. 1 advocate, but after I had studied the problem for some time, I finally jumped down off the fence and organized School No. 2. I will try to be impartial and give both sides of the argument so that the reader may draw his own conclusions.

There are three drawings in the report which will be used to illustrate the discussion. Plate 8 shows a restoration with a one-story bell tower; and Plate 6 shows a restoration with two stories.

The arguments in favor of the one-story bell tower are:

1. The brick corbels in the corners at the top of the unfinished tower might indicate that the final dome had been started when work was stopped. It could, however, be a domed ceiling between the two stories

such as we find at Caborca and San Xavier.*

2. The architectural balance would not be any too good with two stories. This is true; but it is also true that the balance is not any too good with one story either. So it might be a question of choosing the lesser of two evils.

3. The fact that they used broken brick to finish the north side of the present tower might show that they did not intend to build another story or they would have had more brick made and would not have had to use the broken pieces. This argument is not a very strong one because they could always make more brick and the use of the broken pieces might have been prompted by economy.

The arguments in favor of the two-story bell tower are:

1. The baptistry side walls have the tremendous thickness of nine feet. This extra heavy wall must have been built for the purpose of supporting a heavy load.** Going up to the choir robing room we find a wall thickness of seven feet six inches--which is two feet thicker than the lower side walls of the nave. Moving on up to the first and only existing story of the bell tower, we find a wall thickness of five feet three inches--which is two feet thicker than the upper walls of the nave. One can hardly believe that this extra two feet of wall thickness was laid just for the sport of laying brick; and it is well to remember that burned brick, which is quite a bit more difficult to manufacture than adobe, was used in the bell tower.***The fact that they used even the broken pieces indicated to me that they prized their burned brick highly and would not have wasted it on unnecessarily thick walls. According

*In which case we should find an outside stair on the existing arches as we do at Caborca and San Xavier. (San Ignacio has no stairway which might indicate that ladders were used in some cases.)

**One fact which has been overlooked is the passageway inside the north, west and south walls of the tower in the first and second stories. These walls might, partly because of this passage and partly because they were to carry a much heavier load, be much thicker than the nave walls. It is true the factor of safety is much greater than necessary, but did the Padres know that?

***The bell arches and piers are not built solidly of burned brick. A shell of burned brick is back-filled with a mexture of adobe mud and rock plums. You can see this in the south niche in the southwest pier where the brick shell is broken and the back-fill is visible. - Frank Pinkley.



·PLATE·6·TUMACACORI·
·RESTORED·

to the standards set forth in the building, it would seem that the minimum thickness of a bearing wall would be that of the upper wall of the nave--or three feet three inches. If we put a second story of this wall thickness on the existing story of the bell tower (as is shown in the section drawing in Plate 5), there would be an offset of two feet between the two outside wall surfaces of the two stories. This offset would correspond with the two offsets formed by the difference in the wall thickness below, giving the tower a pleasing pyramidal shape. Any question as to whether this second story wall thickness would carry the weight of a dome overhead is immediately settled by the fact that the same wall thickness carries the large dome over the sanctuary.

2. No other mission in the chain has less than a two-story bell tower. They are all two stores.* This is not a conclusive argument, but it does indicate the trend or style of bell towers. The church of San Francisco at Guadalajara, Mexico, which was built in the sixteenth century, is a church which has very much the same architectural composition as Tumacacori. This church, like practically all the churches of Mexico, has a two-story bell tower.

3. The corbels in the existing story of the tower might have been put there for the purpose of supporting an octagon shaped second story similar to that of San Francisco. I believe that this shape would be more pleasing than the square one I have shown in Plate 6.

It is my hope that restoration drawings or paintings of the mission will be made by the government, and exhibited in the museum at Tumacacori. I believe the public would be very interested in seeing what the mission and its surrounding buildings looked like before they were destroyed, and in what certain unfinished portions might have looked like if they had been completed. Of course, we can never be positive about the unfinished bell tower; but we can follow the line of the most logical reasoning on the subject, whether it be for one story or for two.

---

*Cocospera is an exception to this statement.

All two-story towers in the Kino chain either: have an outside stair to get to the second story, as Caborca and San Xavier, or: have no floor between the stores.

The reason for this is that the arches were practical bell arches which were expected sooner or later to support bells. If there was to be no stairway to the supposed second story of bell arches at Tumacacori -- and certainly none was intended, - and there was to be a floor in the upper story carried on the corbels and dome started on the existing arches, how were the bells in the upper arches to be rung? (A ladder by Gum!!) F.P.

FACADE RESTORATION

When the Powell Expedition passed by Tumacacori in 1849, one of the members of the party took the time to make an excellent drawing of the facade of the mission together with a long line of buildings to the east of it. The drawing was made in pencil at a very small scale, so that it is quite hard to interpret some of the details. Though some portions of the walls and buildings were then partially in ruins, I have, by a careful study of the picture, been able to work out a complete restoration drawing of the facade together with the high adobe wall on the west and the buildings on the east.

Referring to the drawing (Plate 8), let us analyze the details and I will try to explain why each was restored as it is shown. In order to clearly show the details, it was necessary to make the drawing more or less a working perspective, showing each detail clearly and leaving nothing to the imagination. This did not help the artistic value of the drawing, so please consider it for its working value.

Beginning at the left of the drawing, let us analyze the large archway through the adobe wall. The Powell drawing shows just the beginning of this arch--perhaps two feet of it above the first column west of the mission. The irregular shape of the top of the fragment indicates that the upper portion of the arch was not a concentric circle. The design shown on my drawing is typical of gateways in old Mexico and California Missions, so it is safe to assume that this design is very close to the original. On the west wall of the nave at the point of offset are two scroll shaped buttresses--one at each end of the building. The Powell drawing vaguely shows these and Mr. Pinkley's memory of the marks left by the originals gave me a basis for the design. The Powell drawing clearly indicates that the four columns of the first story of the facade extended down from their present level and rested on bench-like foundations. I have shown the window above the arched doorway as being covered with bars. I doubt if this were true, as iron bars were hard to transport to this new country, and wooden shutters closing from the inside of the building would probably have served the purpose. I have shown a dome on top of the existing story of the bell tower to show what might have been planned for the unfinished tower. It is my belief, however, that a second story was planned for this tower; a discussion of which I have already given. The buildings east of the mission were rather sketchy on the Powell drawing, but a careful study and comparison with a plan of the foundations (Plate 4) excavated last year, made it possible to work out a restoration. The dome shown is a doubtful guess at what the Powell artist shows and it is too far to the east to check with the possible church foundation that was excavated.

I was able to work out graphically the probable location point of the artist when he drew his picture. This point was on a line



·PLATE·8-TUMACACORI·RESTORED·

extending from the northwest corner of the mission in a southerly direction, just missing the gate column farthest west from the front of the mission. I plotted the line on the map of the excavated foundations which showed this gateway. I then drew an imaginary picture plane across the southwest corner of the mission; next I moved a point on the known line to a position where the proportion between the distances shown on the Powell drawing for the north and west walls of the mission were the same on the picture plane of the plan. This theoretically fixed the position of the artist and the more accurate his drawing was, the closer he was to this position. In order to check the accuracy of his drawing and thereby check the accuracy of my theoretical point, I located it on the ground at Tumacacori and found that the Santa Rita mountains shown in the background were in almost perfect position in relation to his drawing and the mission also compared well for perspective. Therefore, I assumed my point to be very close to the position of the artist. Returning to the plan of the foundations (Plate 4), I projected lines from this point to various points on the east foundation walls. This gave me distances on my plan picture plane which I could check against the Powell drawing, and in this way I had a basis for making a check comparison of the drawing against the plan of the excavated foundations.

I believe this working study gives an accurate foundation for a more artistic presentation rendering of Tumacacori restored, with the exception of the single story bell tower. A rendering of this nature would be of great interest to the visitor.

RECORDS

Twenty years from now if someone asks the Ranger at Tumacacori detailed questions on what parts of the mission are original and what parts are restored, the Ranger is going to be embarrassed--because the chances are that he will not know. As a matter of fact, he might be embarrassed right now, if questioned closely, because there is no record of what is old and what is restored; which, of course, is not the Ranger's fault. I would respectfully suggest that the National Park Service make detailed measured drawings of the walls of the buildings, showing all restored portions. If this is not done soon this very necessary information will be lost forever.

Twenty years ago we could have made, probably, drawings in true color of almost all the designs on the interior and facade of the mission. Today, I would say that fifty percent of them have weathered away; but there is enough left to make it possible to work out what has been lost. Twenty years from now it is probable that even these traces will be gone. One man could record accurately this information in the form of detailed colored drawings in two weeks' time. This record would greatly assist in the working out of a restoration of the high altar in the sanctuary. I made a color study of the nave cornice

at Tubatama. This simple record will preserve forever this particular detail. Similar records of Tumacacori would preserve, as well as re-create the colored details.

SUMMARY

A brief study of the other missions of the Kino chain convinced me that some restoration was necessary at Tumacacori in order to present it truely to the public as a mission. I have tried to show that perspective, atmosphere, and interest would be improved by the restoration of the pulpit, side altar, and choir loft. The respective restorations are detailed and the methods of arriving at these details are outlined.

As a matter of historical interest I have tried to prove that the plans of the mission were changed when the offset point of the nave walls was reached. In this discussion I proved that the present building could not safely carry a vaulted roof, and explained the presence of the two buttress-like columns on each side of the entrance.

For the purpose of restoration drawings I have tried to prove that it was the intention of the architects to have a two-story bell tower above the roof of the nave. This discussion points out some interesting comparisons on various wall thicknesses.

I have explained how I arrived at the various details of the restoration drawing shown in Plate 8. This drawing not only shows the missions, but also some of the other buildings and walls which existed at one time.

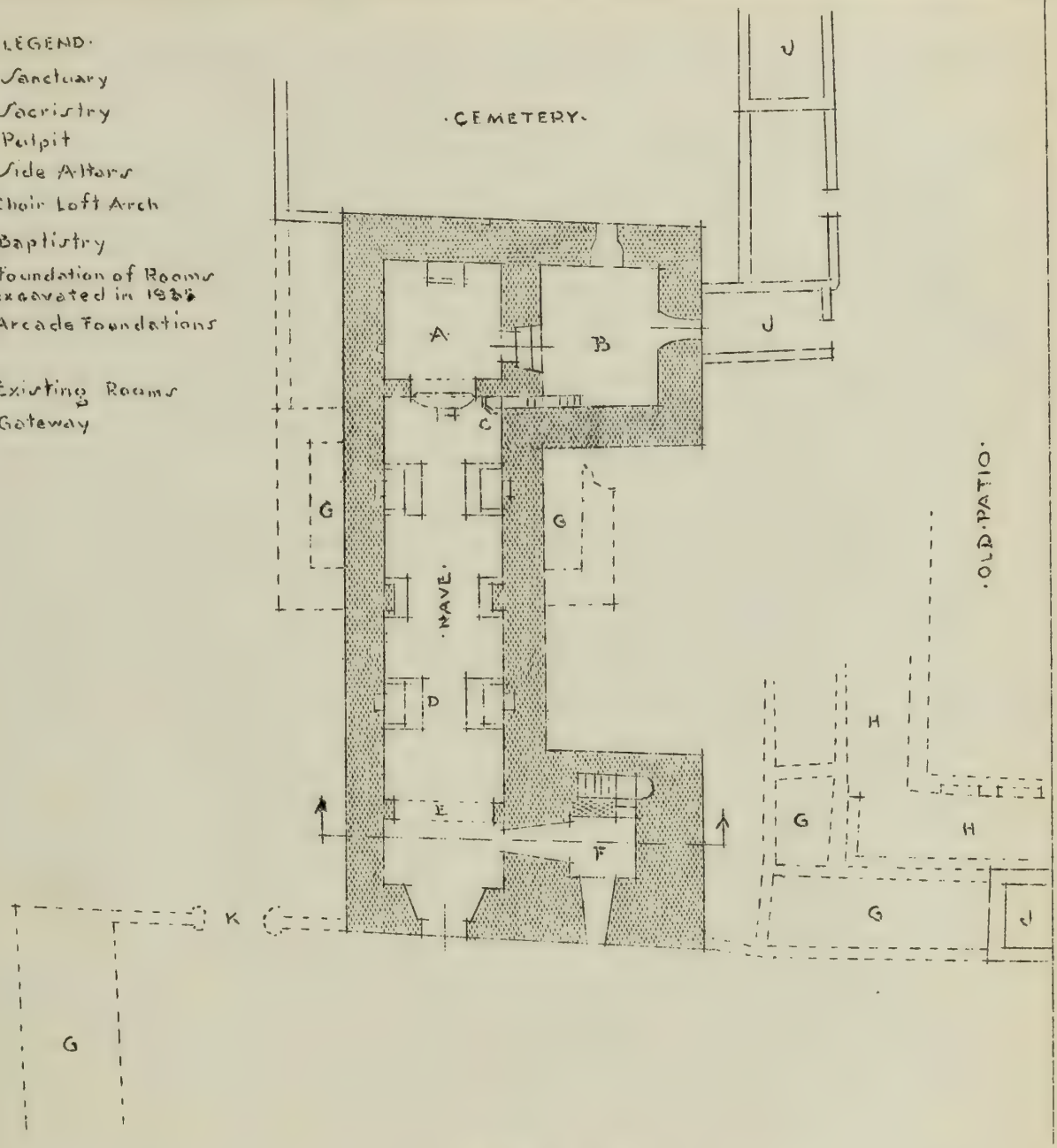
On the matter of records I have tried to impress the necessity of immediately making detailed drawings, showing the location of all restored parts of the mission, and showing all existing painted designs. It is pointed out that a record of the existing designs will assist in working out a restoration of the high altar.

There is no doubt in my mind that the study of the other missions in the Kino chain will continue to bear fruit as I continue to work on the many problems which still remain at Tumacacori.

ADDENDA

The Proposed Museum

Needless to say, I am deeply interested in Tumacacori, and anything that relates to the mission. The proposed museum is so intimately connected with the mission that I feel justified in commenting on the plan which has been submitted. Any criticism which I make of the present plan



·PLATE· 4·

·TUMACACORI·FLOOR·PLAN·

·Scale·

10 0 10 20 30'

J·H·Tovrea

of the proposed building, is activated solely by my desire to preserve Tumacacori and present it to the public in the best possible manner.

If we could see the mission as it was a hundred years ago and compare it with the surrounding buildings which had low roof lines and severely plain walls, there is no doubt that the comparison would make the mission look quite magnificent and stately. It has always been the aim of the Catholic Church to construct their buildings of a magnitude that would make them the center of interest in comparison with surrounding buildings. If high roofed buildings had existed at the site of Tumacacori before it was constructed, the mission would have been built on a larger scale, probably. If the existing buildings had artistic wall ornamentation, then tumacacori would have been even more artistic and ornate. In other words, the church was always built to attract the eye, both by its height and by its ornamental facade.

Now suppose the present proposed museum is built at Tumacacori. It is a modern building with plastered walls and having a two-story effect when seen from the outside. Over the main entrance is a large colonaded loggia, to the right of which is a wall surface which has an ornamental niche. The cornice is also topped with ornaments. This modern building is fourteen feet longer than the mission, almost as wide, and is five feet higher than the top walls of the nave. Furthermore, the location of the building is such that the public must see it before they see the mission. Since the building is actually longer and taller than the mission, it is certain to dwarf the apparent size of the mission. The nice architectural balance of the proposed building will emphasize the crudeness of the mission. In a few words, it is my thought that the public will be admiring and studying the museum building instead of the mission--if the proposed structure is erected.

If we look at Plate 6, the drawing of the mission impresses us that Tumacacori is a rather nice looking church. Now compare it side by side with a drawing of a church like San Francisco. The result would make Tumacacori look smaller and cruder. Comparisons may either improve or injure the appearance of a building. Is there any sound reason why we should injure the appearance of Tumacacori when we can improve it by building the proper sort of building close to it?

My idea of a museum would be to make it as unobtrusive as possible, by keeping its roof line low and unbroken and its wall surfaces plain and simple. By doing this the mission would be seen by the public more as the padres who built it meant for it to be seen by their public.

If the proposed museum were planned to be a restoration of the long low building shown on the right of the mission in Plates 4, 6, and 8, and was built on the site of this original building, it is my belief that two objectives would be accomplished. One of the original buildings would be restored, and the mission, instead of suffering by contrast,

would have its appearance improved. Enough of this building could be restored to amply take care of all administrative needs. A colonade once existed on the north side of this building, facing the old patio east of the mission. This could be restored also as part of the museum building. The one possible objection to this plan is an administrative one. This objection would be that visitors might enter the mission without registering at the museum first. This objection could be overcome by building a low adobe wall in front of the mission in the form of an atrium or courtyard, the gate of which would be an exit only.

****

PEYOTE NOTES

BOYCE THOMPSON SOUTHWESTERN ARBORETUM
Superior, Arizona.

Mr. Frank Pinkley
Casa Grande National Monument,
Coolidge, Arizona.

Dec. 17, 1935

Dear Mr. Pinkley:

I notice in the Report for November by Tom Charles, White Sands, that he mentions "White Sage" as being gathered for the "Peyote" ceremonials of Indians. Will you kindly have him collect seeds and a herbarium specimen and mail them to us so that we may grow some of the plants. Then if you want to add "a fragrance or sweet perfume" to headquarters, we might let you smoke a leaf or two.

The use of the word "Peyote" as a drink does not seem to be quite proper, but should be applied to the various cacti which are as follows:

From THE CACTACEAE

Vol. III, Pg. 84, under Lophophora williamsii. This species is known variously as pellote, peyote, etc.

Pg. 107, under Strombocactus disciformis. It is called pellote or peyote in Mexico.

Page 184, under Astrophytum asterias. Senor Solis says that the plant is known as peyote.

Vol. IV, Pg. 59, under Pelecyphora aselliformis."** and is also called peote, and peyote, also peyotillo and peotillo."

From OUR NATIVE CACTI

Pg. 60 & 61, a description of the use of Lophophora, etc. It is the plant known as Peyote, Pellote, etc. The use of the Peyote spread

from the Southern tribes to the North, etc.

Pg. 146. "What is the Peyote?" See Pg. 60.

From MANUAL OF POISONOUS PLANTS

Pg. 637. "under the name of Pellate (Anhalonium sp.), the Indians of the Rio Grande Valley of Mexico have for ages used the tops of this plant which they commonly call "mescal button" or "Mescal bean". The use has extended to Indians in Oklahoma and Indian Territory and it is said, to the Tama Indians of Iowa."

From BULL.TORREY BOT. CLUB, Vol. 23, #2, Pg. 38.

***"my attention was drawn to a plant, called Peyote, which**". ***"It is said to be the Peyote or Peyotl of northern Mexico," Vol. 23, #3, Pg. 116. ***"by a mention of the Peyote (Anhalonium fissuratum Eng.) of the rocky highlands of Western Texas and Northern Mexico, a plant which, when chewed, is said to produce a sort of delirious intoxication."

Sincerely yours,

Fred Gibson

****

HOW TO TELL ABOUT "RINGS" By Earl Jackson

For a year and a half I have been struggling along without a museum chart to help me explain the tree-ring dating system to visitors who have never heard of it. I have worked out the following explanation which clicks, and am passing it on in the hope it may help some of you other men in the field without charts. I don't claim the explanation is perfect, but would very much appreciate any constructive criticism on it.

"Folks, do you see that big pine over across the creek?" (Pointing at a tall pine). "Let's suppose we were to saw that tree down. The cross-section would show that it is made up of concentric rings, starting with tiny rings at the center and ending with very large ones at the outside.

"Those rings show the growth of the tree. Ordinarily a pine grows one of those rings each year. So by counting the rings you tell how old the tree is. Suppose that tree we have cut is three hundred and fifty years old, having that number of rings.

"Now in wet years a tree grows a thick ring. In dry years the ring is sometimes quite thin. By this habit of growth we learn that rainfall comes in cycles. There will be a period of wet years, and a period of dry years. These make up a weather cycle.

"No two weather cycles ever leave exactly the same record in tree rings. Nothing in Nature is ever perfectly duplicated. So that each set of rings explaining a weather cycle is separate and distinct from every other set in its arrangements of thick and thin rings. The tree-ring specialist studies the growth rings under a microscope, and draws a chart of them.

"Suppose we find in this Indian ruin a pine timber which was used as a ceiling support. We saw the log in two and find it has 75 rings. We make a chart of the rings, as we did on the larger tree.

"Then we compare the two charts. If we find any part of the charts which show identical arrangements of rings, we will know the two trees were growing at the same period in history. Suppose we find that the outermost, or younger, twenty-five rings of the ceiling timber show exactly the same alternation in thickness and thinness as the innermost or older twentyfive rings of the large tree we have just cut.

"We have worked out a time sequence, or chronology. We have learned the year in which the ceiling timber was cut, by working back from the living trees. In other words, we have cross-dated - brought one date over to tie into or overlap with the other one.

"The ceiling timber of the ruin was cut 325 years ago. How do we know? The tree we cut was 350 years old. The timber when cut was 75 years old. The first 25 years of growth of the mature tree are the same as the last 25 of the timber. So the first 50 years of the timber carry the date back to 400 years ago. And so, 325 years ago an Indian cut a timber to complete the ceiling of his house with."

****

VISITOR IMPRESSIONS

By Drs. Dorothy & John Keur

Dear Boss,

We herewith submit for your scrutiny a more or less irregular and irrelevant report of our ramblings among the Southwestern Monuments during the past four summers. The "we" stands for Dot and John Keur, self appointed eastern representatives and boosters for the Southwestern Monuments and their personnel. We have tried to induce many of our friends to visit the monuments; we have shown them our collection of over a thousand pictures of the glorious country that is yours; we have read them choice selections of adventures from our diaries. We

wish to thank all our friends of the Southwestern Monuments for the courtesies they have shown us and our eastern associates; notably Dr. and Mrs. Strayer of Teacher's College, Columbia University.

In preparing this report, we had quite an argument as to how we should title our literary efforts. Dot said "I'll call the part I write: Travels with a Donkey", but I voted for:"Exploring the Southwestern Monuments with camera, notebook, tent, tire chains and one long handled shovel," and so shall it be called. That shows who is boss in our family. Here Goes:

CHACO CANYON. My first contact with the Monuments was in 1925, when, as a forest engineer and confirmed bachelor, I visited White Sands, Bandelier, Natural Bridges and Chaco Canyon, on a hitch hiking trip from Louisiana to California, Six years later, our contacts with the family of the late George H. Pepper, who worked at Pueblo Bonito in 1896; and Dot's interest in the field of anthropology started us on a 10,000 mile trip to the Southwest. We have repeated our visits every summer since that time. Our original interest and first love was Chaco Canyon, where we worked on, in and around Threatening Rock and the cliff cavities. Messrs. Julian, Patterson and Miller have been of invaluable help to us, supplying us with food, shelter and other necessities of life. The Springsteads also contributed more than their share. Hence, people in the east here think that Pueblo Bonito is the name of our summer home. We are so much at home there that we no longer worry about the condition of the road from Thoreau.

We are acquainted with the large amount of Chaco Canyon material at the American Museum of Natural History, only a small part of which is on display. Would it be too much to hope for a museum at Bonito where some of this extra material could be displayed?

Last summer, we were greatly worried about the walls of Bonito, which had fallen here and there, but Cal will put a stop to that, even if he has to stand there, holding up the wall with his broad shoulders. We sincerely hope that the land situation at Chaco will eventually be straightened out. We recall with much pleasure the many happy contacts made at Chaco, with N.P.S. men, anthropologists, archaeologists, entomologists, geologists, traders, Navajos, prehistoric mummies, and just people

AZTEZ RUINS. We were surprised at the changes that had occured at Johnwill's monument in the last few years. They told us some stories in the town of Aztec about the man on the flying trapeze over at the ruins. So we went to investigate, and enjoyed Johnwill's performance, flying through the air with the greatest of ease, via the wooden lintels. When we visited the ruins, the museum was very crowded, but we see by the monthly reports that the situation is quickly being remedied. I used to worry about the drainage problems, but Bob Rose's report seemed

to solve all difficulties. Three cheers -- the barn is gone, so we hear. We still like the Aztec Ruins, in spite of Cal Miller's insidious propaganda.

BANDELIER. An almost unbelievable change within eight years. A beautiful road leading to the floor of the canyon, a wonderful trail system and an excellent CCC camp greeted us. We liked the Ceremonial Cave, and could sit by the hour enjoying the view. Paul Reiter did a fine job framing the wall paintings. Earl Jackson was in Santa Fe at the time of our visit; we were sorry to miss him. A visit to this monument adds new beauty and appreciation to Bandelier's "The Delight Makers." How about a labeled nature trail from the parking area to the Ceremonial Cave?

CANYON DE CHELLY. We visited here in 1934 and 1935. Will we ever forget the hospitality of the H.C.W.P. and Mrs. Cozy? No, a thousand times no. I am sure that if Cozy hadn't pushed us out of the trading post we would still be looking at his museum of blankets, pottery and paintings. In 1934, we camped near the head of the White House Trail. We used to clamber laboriously up and down the unfinished trail, to the mild astonishment of Mr. Gray. This year,(1935) with the trail complete, we fully realized the efforts of the Park and Indian Service in helping the Navajo and incidentally giving the poor white a short cut to the mystic beauty of White House. Both years, we hiked in de Chelly nearly to Monument Rock, and rode horseback in del Muerto up to Antelope House. The last time, Mr. Caywood staged a private rodeo for our special benefit, which we greatly enjoyed. Mr. Budlong thoroughly examined our credentials and equipment. We hope that he never had occasion to regret that he gave us permission to camp near the head of the trail. I certainly cleaned that campsite thoroughly....

No monument in the Southwest makes us feel so insignificant while contemplating its majestic grandeur.

CASA GRANDE. Well do we remember our arrival at headquarters late at night, tired, dusty and worn. We were greeted and revived by the kind ministrations of the Boss, Nancy Margaret and the Roses. We had the entire camping ground to ourselves at night. Next morning we thoroughly enjoyed the three and a half hour inspection of the ruins under the personal direction and stimulation of the Boss himself. You surely gave us a grand tour, and Dot and I still argue now and then about some of the points discussed during that trip. The design of the labyrinth, the two "lined up" holes in the walls, the Hohokam material, etc., have been subjects of debate. We consumed so much time here that the graph of the length of our visit in the next monthly report went clear off the top of the page. Our visit to headquarters was one of the highlights of our 1934 trip.

MONTEZUMA CASTLE. We visited here when Mr. Jackson was on leave. The fishes treated us royally. Charlie Steen and Frank spent the greater

part of the day showing us the many unique features of the monument, while Corabeth spent the remainder of the day feeding us. We were sorry that we couldn't stay longer, but we are hoping to revisit here....if for no thing else, then to see and admire the latest little Fish. We hope that the water problem is solved by now.

NAVAJO. First we stopped at the unusual and charming home of the Wetherill's at Kayenta. We received directions on how to reach Betatakin, and little did we then realize that it would take us a good 24 hours to make the trip. I don't know to this day how we ever managed to push our 1929 Ford over Marsh Pass. But that was only the beginning. After turning off the road, we were stuck for four hours in the sandy newly completed trucktrail. We decided to keep away from the truck trail after that experience, which we managed to do so well that we lost our way, and got nowhere. Wearily we made camp. Next morning we retraced our trail, and finally arrived at the Roricks, disappointed at having missed the famed ruin. But Mr. Rorick, bless him, took pity on the greenhorns from New York, jumped in his truck, and guided us all the way to the rim of the Tsegi. We hiked down the trail, and were repaid a thousandfold for all our trails and tribulations as soon as we got our first unforgettable glimpse of Betatakin, in its exquisite setting. A delightful afternoon was spent with Milton Wetherill hiking, exploring and talking. May we suggest the placing of a few signs along the road to encourage the weary pilgrim in search of prehistoric beauty, so that he shall not fall by the wayside and miss that gem of all the ruins, Betatakin.

TONTO. Up the steep trail to the fence we climbed. Our Apache guide produced an imposing bunch of keys to open the lock of the gate. He tried each and every key without success, but it wasn't his fault, he said, it was "the 'Mexican' boy, he fool around with lock." We discovered later that he was referring to Charlie Steen, who had left for Montezuma. We held a short conference and decided to scale the fence, which we did quite readily. "If the Boss could have seen us," said Dot, "he would have lost his faith in fences." Our climbing was well rewarded; the ruin has many interesting engineering features. By the time we had climbed back to the right side of the fence again, our guide produced a key that did fit the lock, and proceeded to demonstrate that he could open it.

WALNUT CANYON. We had a short visit with Paul Beaubien and verified the presence of walnut trees in the canyon. Some of the cliff rooms here could probably be restored effectively.

During our travels we also visited Gila Cliff Dwellings, Wupatki, Hovenweep, Yucca House, and Saguaro; each with its peculiar interest. In due time, we hope to explore them more thoroughly.

With best wishes to our friends among the personnel of the Southwestern Monuments and with grateful appreciation of their services, we are, sincerely,

COMMENTS ON RANGER GUIDE SERVICE AT CASA GRANDE NATIONAL MONUMENT

By Dale S. King, Junior Park Naturalist

Location

Casa Grande National Monument is located on State Highway 87, a main-traveled all-weather artery, 57 miles south of Phoenix, 67 miles north of Tucson, Arizona.

A paved entrance road, six-tenths of a mile in length, stubs off the highway, ends at the Administration Building and parking area.

Climate

The middle Gila River Valley in which the monument is situated can be said to possess two seasons: seven and one half months of extremely pleasant winter weather, with warm sunny days and cool to cold crisp nights; four and one half months of notably unpleasant summer weather, with very hot days and nights, insects, thunder showers, and dust storms.

About the middle of May, winter breaks into summer. Approximately the end of September, or early in October, summer changes somewhat less abruptly into early winter.

Travel

During the National Park Service travel year of 1935, 27,095 persons visited the monument and were conducted through portions of the ruins, the museum, or both. Approximately 5,000 additional persons used other facilities of the monument---picnic area, comfort station, etc. This latter group requires only moderate attention from the Custodian and Ranger but does consume a considerable portion of the maintenance time of the janitor.

Casa Grande's 27,000 visitors in 1935 were distributed seasonally as follows:

June.....1,359		
July.....1,198		
August.....1,376	VALLEY SEASON	
September....1,691		
October.....1,825	Sub-total, 7,449;	Average about 1,500 per month
November.....2,389	PLATEAU SEASON	
December.....2,463		
January.....2,327	Sub-total, 7,179;	Average about 2,400 per month
February.....2,923		
March--------3,335	PEAK SEASON	
April.....3,766		
May.....2,443	Sub-total, 12,467;	Average about 3,100 per month

Although division lines between the above seasons are arbitrarily drawn, they will serve to illustrate periods of activity at the monument and their relative importance.

Note that Casa Grande essentially is a "year-around" monument. There is experienced no such cessation of visitor contact work during any season as is the case in certain parks and monuments which are almost completely unvisited during the winter or inclement weather. The three travel seasons arrange themselves in the ration 1:1.6:2. Yet this ratio does not mean guide work is cut 5C per cent in summer and 2C per cent in autumn---as a matter of fact, there is little decrease. Number of groups remains almost the same, and guides make almost the same number of talks, but parties are composed of fewer people, Moreover, summer work is complicated by uncomfortably hot weather.

Mental Attitude of Visitors

Visitors to Casa Grande are usually in a hurry; they display to a marked degree the same tendency to rush through the monument's attractions that they display in other monuments and parks, according to statements I have heard in conversations with other Park Service men. I believe this tendency is more acute at Casa Grande than at any other unit in the Southwest, because of the following factors: (1) the monument is so accessible that people feel no spirit of accomplishment at having made the trip; (2) the monument's position about halfway between the two largest cities in Arizona leads many groups to say "On our way to Tucson (or Phoenix) we'll drop off at the Ruins for a few minutes and show them to our guest/" (3) the pleasing entrance gate and the view of the protective roof over the Casa Grande attract many idly curious people who have no idea what they are going to see, and do not have the time to see anything.

The most common type of group which visits the monument is composed of two or three Arizona residents who have seen the ruins several times themselves but are bringing a guest to see the sights also. This usually does not make for a long stay. The next most common group is the bona fide tourist who usually is interested in the monument even before he gets here. This is the best brand of visitor. The third most common group is the family of cotton pickers, or itinerant farm workers---ignorant, dirty, eager to tell the guide all about Indians and the arrowhead their father found on the farm in Oklahomaor Texas. This class forms the majority of visitors during the summer season, and arrives in such numbers the guides are kept fairly busy.

What the Visitor Sees

Casa Grande's 127 prehistoric mounds are scattered irregularly over 472 acres of flattish desert covered fairly well with mesquite, creosote, and salt bush. The six major domiciliary "mounds" have been named the first six letters of the alphabet, and have been excavated partially.

Compound A, which contains the Casa Grande, or Great House, has been about two-thirds excavated, and is the largest compound on the monument. The Casa Grande itself, a four-story watchtower-apartment house, is protected by a large sheltering roof, but other excavated walls have no protection whatsoever save an ineffective coating of concrete on a small proportion, which was experimentally applied several years ago.

Following is a listing of the attractions of the monument in the order of their present importance to visitors (1) Casa Grande, Compound A and middens, (2) Museum, (3) Compound B, Compound E ("Clan" House), Compound F. Further excavation and stabilization will bring the "ball court," and Compounds C and D into prominence, and also other smaller structures or exhibits in the vicinity of the Administration Area.

Personnel

Present personnel consists of a Custodian and a Ranger, both Civil Service appointees. An intermittent janitor-laborer spends approximately half of his time on Casa Grande affairs, the other half on Headquarters matters.

There are no temporary ranger or ranger naturalist positions provided for peak travel seasons.

This 2½-man personnel, although not sufficient, places Casa Grande in an enviable position far above that of most other Southwestern Monuments. Ample protection is provided, and presence of a laborer to perform maintenance releases the Custodian and Ranger for almost uninterrupted visitor contact work. It is true that the Custodian is forced to spend a small proportion of his time on such affairs as maintaining fuel supplies, overseeing repair of light and sewage systems, etc., but such duties require less time and are less arduous than in several other monuments with less personnel.

Present Visitor Contact Procedure

From time clock figures which have been kept since July, 1934, it can be said that the average group of visitors spends 55 minutes on its guided trip---32 minutes in the Casa Grande and Compound A, 23 minutes in the museum.

When the visitor parks his car and steps on the porch of the Administration Building, he is greeted by the Custodian or Ranger and asked to sign the registration book. The party is then accompanied into Compound A where the guide attempts to give a short background talk telling who the people were, what type of life they led, and a brief history of the Casa Grande insofar as dates are known. Visitors at this point always are eager to go into the building itself, and very little groundwork can be laid.

Then the guide leads the way through the various rooms of the Casa Grande, following a narrative sequence which through experience has proven satisfactory. Much factual detail concerning the building is given.

After Compound A, visitors are sometimes (according to degree of interest) led to the top of the large East Midden where a view can be had of the relationship of Compound B. E, and A, as well as providing a fitting place for some popular discussion of stratigraphy and dating.

Then the group is taken into the museum where the other 23 minutes are spent in discussion of material culture and mortuary customs. A few heterogeneous baskets and pickled reptiles are placed in the Custodian's office, which is the last room entered. There is little chronological or subjective arrangement of the present museum; exhibits are almost totally non-graphic; the whole impression is one of a crowded collection rather than an illustrative or interpretative museum.

Pressure of visitor traffic rarely permits time for guides to accompany especially interested parties to compounds other than A.

How does this method function?

Briefly, I think the scheme a failure and unworkable. Perhaps the following facts will be self-explanatory:

Under the present system visitors are accompanied during every minute of their stay, because (1) the ruins must be protected from vandalism as well as interpreted, and (2) the museum must also be protected as well as explained, inasmuch as it is completely non-self-guiding.

Only two men, supposedly, are available for guiding, yet frequently four, five, or more groups will be on the ground. They will not have come in a bunch,---they will have dribbled in at moments when joining to another party is inconvenient.

When a party starts for the ruins, and another car drives up within five minutes, it is very feasible to join the latter group to the former. They miss some of the important background lecture, but usually are informed by the tactful guide before the ruins trip is over. If, however, the second party comes after a five minute interval, "join-ons" are awkward, for they have missed so much of the early talk they ask questions which have been covered previously, and thus cause repetition which is boring to the first party which must listen to it again. Since the first group realizes it is being taken through as a unit, it rather resents interruptions caused by later groups. When the guide has completed the ruins talk for the first group, he knows he has several other groups which have not heard the whole story, and yet he cannot give this information except in abridged form because he must take the whole group to the museum--the other guide having come to the ruins with a group in the meantime.

Joinings are easily made at the beginning of the ruins trip or at the beginning of the museum talk. Later joinings are very awkward. The normal answer, obviously, is to have groups wait twenty or less minutes for the next ruins or museum trip to start, so that they can be joined easily.

This, unfortunately, is impossible. Several experimental attempts have been made to induce people to wait. It does not work. There is no comfortable or interesting place to rest. The Administration porch is cold in winter, hot in summer. If visitors are turned into the museum to browse around, they stay an average of 17 minutes per party, gain little interest or information because the museum is not arranged properly, does not contain graphic exhibits, and is not labeled. They look around at the most interesting exhibits for a while, spend some time in front of the pickled snakes, and then come out on the porch and wander around, peeking into the office windows, sneaking out the back door and heading for the ruins unaccompanied, or go out to the gate and wait impatiently for the guide to take them to the ruins. An intelligent group which might have spent a pleasant hour in the museum with a guide, or three quarters of an hour in a self-guiding museum, stays about a quarter of an hour in the present museum, and then does not wish to go in again after their ruins trip, because the old hurry complex commences to operate.

In the past, headquarters personnel aided in handling heavy traffic. Actual figures as to the participation of headquarters personnel in guiding activities at Casa Grande have not been worked out, but it is sufficient to say that a large amount of time was taken from general work to solve the problem at one monument. Happily, this situation is now corrected; with the exception of a day off a week for each Casa Grande man, guiding by headquarters staffman is compensated for by aid from the monument in certain other activities.

UNEVEN QUALITY

The present scheme produces a very uneven quality of service. Service is excellent for parties which happen to arrive on the ground when no other visitors are present; it deteriorates rapidly for each succeeding party which arrives while others are on the grounds. If it were possible to assign a guide to each party, guide service theoretically would be perfect, but, of course, this is impossible. It would result in an inordinate number of guides, busy only a relatively small proportion of their time, and with nothing to do the rest of the time.

MIXED GROUPS

Due to the impossibility of selection of types of parties to be joined to one another, the present system produces very mixed groups indeed---a fine group of intelligent people joined by a group much lower in intelligence and education, for example. Such a heterogeneous collection certainly fails to receive the type of trip each component desires.

"INDEPENDENT" PERSONS

It has been noticed that a certain small proportion of visitors desires freedom even to the extent of failing to gain the usual amount of information. This type of person feels "herded" when he or she must be accompanied by a guide. They wish to look around at a pace dictated by their own wishes; they want to gain their own individual impressions rather than to have information neatly laid before them by the guide's lecture. This group is perhaps more numerous than the average ranger suspects, because most of them are courteous and will submit, although secretly unwilling, to the accepted routine. There is no provision made for this type of person in the present scheme.

VISUALLY-MINDED PERSONS

Under the present system of guiding at Casa Grande, the person who most readily gains perceptions by means of his auditory senses is favored. The visually minded person is slighted, somewhat, particularly in the museum. It is true he sees "what", but the "why" is transmitted vocally, and he is handicapped in learning in this fashion. Psychologists say that visually-minded persons out-number all others.

DEAF PERSONS

Many visitors, if not deaf, possess some hearing defect which reduces their enjoyment of a spoken lecture to a great extent. These unfortunate persons might gain a lot of enjoyment in a museum, but find little in the Casa Grande museum to engross them.

Effect on Guiding Personnel

The man who guides steadily at a small but heavily visited monument like Casa Grande possesses one of the most fatiguing, monotonous jobs in the National Park Service, I am sure.

It is well known that a speaker who gives two or three speeches a day has done a full day's work. Casa Grande men must guide at least six hours---talking almost every minute---per day in the winter season and almost that much during other seasons. They have to handle groups of all sizes and descriptions. They are on a mental strain every minute to be in readiness for questions pertaining to everything under the sun. Yet it is not the unusual party or question which causes the fatigue--- it is the interminable repetition of the same primary questions which brings monotony.

Due to existing circumstances, guides at Casa Grande must travel the same old merry-go-round: From the porch to the Casa Grande, back through the museum. He gives the same old talk, keeping abreast of modern developments, of course, but inevitably falls into a set routine, varying it only through the desperation of boredom. When the Casa Grande guide has given

his talk four to six times a day, six days a week, for six months, he has run the gamut of possible variations. He is stale. It takes a rare question to snap him to awareness of the intriguing aspects of his subject.

It is physically impossible to maintain a high degree of service throughout the day. The guide holds the visitors spellbound on the first morning trip; he does almost as well the second trip. If the third trip follows closely, he is temporarily tired of his subject, and his talk certainly shows it, try as he will. Lunch hour provides a respite, and the fourth talk is not so bad. He consumes quantities of cough drops during the afternoon, and practically all his sparkle is gone---he hasn't the energy or enthusiasm to hold or interest his visitors as he should.

In many parks it is the custom to allow an afternoon off for the man who is to make the campfire lecture that night. He talks only for an hour or a little more. The Casa Grande guide has no preparation work to do, but on busy days his parties often average 20 persons, sometimes reaching 40. He gives six identical"campfire lectures" a day and knows that the next day will be the same---and the next week---and the next month. And he realizes there are many things he can do to improve his monument and the service given therein, yet he does not have the time. Almost every guide develops at some time or another that peculiar irritation which public contact produces. This does not make for energetic guides or good service.

SUGGESTIONS FOR IMPROVEMENT

Divorcement From Headquarters

Casa Grande's present setup is that of a 2½-man monument. It is my firm opinion that it should be treated as such. In all fairness to other monuments in the Southwest, to headquarters, and to the monument itself, Casa Grande should be accorded no privileges not shared by other monuments.

Protection against vandalism of Casa Grande's ruins is amply taken care of by the present setup. The monument is small; there is no patrol work necessary, and no fire hazard. The only question, therefore, is how well or ill the visitors are handled. Heavy travel makes Casa Grande an acute problem, but this same problem is found at other monuments not close to headquarters---Bandelier, Aztec, White Sands, Montezuma Castle, Walnut Canyon, Tumacacori. A visitor at Casa Grande is no more important than a visitor at any other monument.

The burden of helping out at Casa Grande rush periods has fallen chiefly to the Naturalist Division in the past. Why should the Park Naturalist spend a day guiding 50 visitors through the Casa Grande, when that very same day 50 visitors wandered around Sunset Crater, saw no interpretative exhibit whatsoever, and went away wondering why the government set aside that small crater? Perhaps the Naturalist could

have spent the day more profitably devising a trailside exhibit for Sunset which for years would have helped portray to thousands of visitors Sunset's exceedingly interesting place in the Southwestern scheme. Such illustrations could be multiplied a hundredfold.

As mentioned above, this phase is no longer a problem, because Casa Grande and headquarters are now well separated in function. I stressthe point only to emphasize its not-to-be-forgotten importance in possible future arrangements.

Possibilities for improvement in interpretative methods in the Southwestern Monuments are illimitable. Spending full time on their problem, the Naturalists would and will be far behind for many years. Theoretically, they should allot only four percent of their time to each monument; actually, they must adapt their work to a ratio dictated by the acuteness of each monument's needs. Casa Grande was over-emphasized for a short time,---not through the fault of any person, but because of circumstance.

PROPOSED VISITOR CONTACT PROCEDURE

Busy Days

When the first party shows up in the morning, one man should greet them in the usual manner and take them to the ruins as usual. The other man remains at the museum to greet newcomers and act as museum attendant.

The ruins guide gives the little "background talk" outside the building, and then goes through the building, following a set sequence as to rooms entered. As the museum attendant sends more parties to join him, he greets them thusly: "How do you do? If you care to join this party you are welcome to do so. We have already seen part of the building, but you will be taken through that part just as soon as this trip is finished." If the visitors do not care to join, he politely tells them they must do so, or not enter the building. This is necessary because of the constant vandalism problem. The ruins guide keeps going through the building in the same routine, and keeps track of where each party joined him. As each party finishes its circuit, he suggests that they might be interested in the museum, if they have not already seen it.

When the ruins guide's vocal chords fail him, or he needs a drink of water badly, or is completely "fed up" or fatigued, he excuses himself for a moment, and exchanges stations with the museum attendant.

When, as sometimes happens, the ruins guide finishes with his group and has no more visitors in the ruins, he is at liberty to stay there, or even better, return to the museum and rest until the next party arrives, when the process is repeated. The two men can keep approximately tab on the amount of ruins and museum time they each spend, and can even up their work by alternating days or half days.

The museum attendant, in the meantime, has been on duty in the museum and greeting visitors. He is ever ready to answer questions, which are invariably forthcoming, and usually lead to a completely guided trip. Yet visitors feel a certain freedom, and know they can look around undisturbed if they so wish.

As each new group comes on the porch, he greets them, asks them to sign the register book, stamps the time clock records. He then sends them to the ruins. However, a good museum attendant will quickly size up his groups, and will remember the type of visitors then in the ruins. If, for instance, the level of intelligence and interest seems to be fairly high among visitors he has sent to the ruins, and low grade party shows up, the museum attendant will turn the latter into the museum and thus keep the type of visitors in the ruins trips as homogeneous as possible. When the low grade party has finished its museum trip it goes to the ruins, but the guide there has had an additional 23 minutes of uninterrupted trip with his good group. This system is not perfect, but is better than the one now used.

Trail Trips

It will be noted that the above system rarely gives any opportunity for guided trips to exhibits or compounds other than Compound A.

This deficiency should be corrected by a system of self-guiding trails:

(1) Short trip including Ball Court, Compound B, and Compound E.

(2) Longer trip including the above-mentioned and also F.

When a group appears particularly interested after their trip, through Compound A, the possibility of seeing some of the other ruins should be suggested by the museum attendant or ruins guide, and many visitors will gladly take the self-guided trips and gain a great deal of additional pleasure from the monument.

These trails involve no trail building, for already existing paths can be used. But vegetation and points of interest in the ruins themselves should be labeled, and the labels should correspond with a guide leaflet, containing ground plans and full explanations. This leaflet can be worked up very easily by headquarters naturalists cooperating with Casa Grande personnel, and can be mimeographed cheaply.

As Mr. Pinkley has suggested, the starting points of these trails should be "blind," else they will be over-run by picnickers and irresponsible persons. The visitor should be unaware of the existence of the trail until the ranger points out an inconspicuous marker some 200 feet away in the brush, and tells the visitor to walk to the marker where the trail begins.

Self-Guiding Museum

One of the most important steps to be taken immediately is to make the museum capable of acting as a self-guided unit in emergency. Personnel is so limited in proportion to visitor totals, that emergencies at Casa Grande are rather the rule than the exception.

I feel that the museum should be a very flexible and varied unit. It should be completely graphic, interpretative, delineative, and labeled sufficiently so that independent or deaf persons can go through it unaccompanied and yet have a clear idea of the exhibits and their place in the scheme. The hurried visitor should be able to rush through and see just as much as he wants or as little. Labels on exhibits should be curt and concise---expanded labels and descriptive matter can be included in a museum handbook, for the deaf or the thorough-minded. The museum should be arranged so that nothing interferes with a guided trip, for these, when executed well, produce the ultimate in visitor service.

By no means should the museum be without an attendant or docent. Always should a guide be available to persons who want one, and the guide should be keenly on the lookout for persons who are too timid to ask for one. I do not want the attendant to be seated at a typewriter when visitors are present; he should be obviously available.

To make a museum of this type at Casa Grande or any other monument is a work of years. Yet the Casa Grande museum should be rearranged so far as is possible with the present available space, so that, upon emergency, it will give greater service than at present.

Urgent is the need for more space. Construction of a new wing of the building would provide exhibit room for Casa Grande's large collection, and, more important, free the Lobby so that it could be used as a gathering place, and a comfortable spot to rest in.

Days Off

For the good of the service and of the men, each man should have one day off each week. Otherise, fatigue and monotony will seriously impair a man's effectiveness.

Days off should be taken in the early part of the week when traffic is lightest. When one man is off duty, the only solution is for the other to make trips at scheduled intervals of at least an hour. Visitors will have to wait, or else see just the museum. When in the ruins, a sign on the registry book should read "Visitors will please register, and join the guide in the ruins."

It seems a pity that persons should receive poor service in order to give a man a day off, but such a system must be used until additional personnel solves the problem. Moreover, at other monuments visitors often

must go partially unsatisfied occasionally; why is one monument more important than another in this respect?

Headquarters staffmen can aid a little by directing visitors to the ruins or into the museum on such days, but when the rights of all monuments are considered, should spend very little time at this. The door to the Headquarters Office (leading off of the entry porch) should be painted or exchanged for one of translucent glass, so that visitors will not feel erroneously that they are getting poor service while there are many men available. The present lettering on the door should be retained. It explains that the offices are Headquarters and not Monument offices.

Lunch Hours

One man's lunch hour should be from 11:30 to 12:30; the other from 12 to 1:00. From 12 to 12:30 a sign on the registry desk should state, "Ruins and museum closed from 12 to 12:30. Next trip, 12:30 p.m."

On days off, ruins and museum should be closed from 12 to 1:00 for the man's lunch hour, and an explanatory sign should state this.

Annual Leaves

Relief during these periods will be given, as in the case of other monuments, by the traveling Junior Naturalist.

Sick Leaves

These shall, when necessary, be taken care of by the same method used for other monuments---relief by the traveling naturalist, or substitution of a cheaper method, when available.

Work Schedule

CUSTODIAN: Experience has proven that a Custodian needs the equivalent of four days a month for general maintenance duties: overseeing repair and maintenance on quarters, machines, sewage, water and light systems, and attending to the thousand and one odd jobs that spring up when a man is in charge of a small hamlet of 25 persons, their quarters, and almost a square mile of fenced ruins.

In addition, the Custodian needs the equivalent of two days' time for correspondence and reports. In addition to his governmental reports, he has to answer many letters of inquiry concerning the Monument.

Moreover, the Custodian should be allowed about four days a month for improvements to his monument: construction of new museum exhibits, installation and improvements of self-guiding trails; care of ruins, planting of flora, etc.

The Ranger needs one day for assembling travel and weather reports and aiding in preparing the monthly report. He also should be allowed

the equivalent of four days a month to spend on improvements.

It seems a trifle peculiar to ask for eight man days per month for improvements, yet the monument would benefit greatly if such a system could be instituted. It would give better service to visitors, and would prove infinitely beneficial in the long run. Of course, such work will lessen eventually but it will be a never-ending problem.

Need for More Ranger Service

Discussion of time for improvements is utterly out of question with present personnel. It is almost impossible to maintain the status quo. A pressing need is manifest for an additional man during the months of November through May, inclusive. Such a man would equalize the brand of service given at the Monument, would clear up relief problems on days off, lunch hours, etc., during the peak travel period.

There is little need for an extra man at the monument during the summer months. Therefore, the appointment should be Ranger-archeologist to the Southwestern Monuments, detailed to Casa Grande for the mentioned period, and to any one of several critical monuments in the northern part of the area during the summer. Such a flexible arrangement would be highly beneficial.

If not allowed a full time permanent man, a request for a temporary from November through May, inclusive, should be pressed urgently. The monument should have an extra guide at that period by all means.

Business Hours

For efficiency purposes, eight hours of guiding are all that can reasonably be expected from a man, yet during spring and summer months visitors keep coming until dark, sometimes necessitating the turning on of lights to show the museum.

Last summer, for the first time, the entrance gates were closed at five p.m., a guide finishing with whatever parties were on the ground at that time.

Insofar as I know, this move was almost perfectly successful. Visitors demurred occasionally, but at no time did their feeling approach resentment. Occasionally a car opened the gates and came on in. If they were really interested, someone always took them through.

I hope this custom will be continued. I should like to see it improved by placing a sign on the gates when closed "Ruins and museum closed at 5:00 p.m. Picnic grounds always open." A sign at the picnic grounds forbidding visitors to walk to the ruin would just about complete solution of the late visitor problem.

It has been proved by time clock records that during summer months, better efficiency can be gained by having one man on from 8 a.m. to 5 p.m., and the other from 9 a.m. to 6 p.m. One man can handle all parties between eight and nine, yet a man is needed after five to finish with groups already on the ground when the gates are closed. The staggered reporting hour, then, handles this situation nicely. It should be used, however, only from March through September.

SUMMARY AND CONCLUSIONS

1. Casa Grande is located on a main highway, halfway between Arizona's two largest cities, in a winter tourist district.

2. Climate is very pleasant for seven and one half months a year; very hot and disagreeable for four and a half months.

3. Casa Grande receives about 27,000 or more visitors per year, the peak being from February through May, inclusive. November through January are the next busiest months, but June through October produces much travel also. Therefore, men at the monument experience no cessation from guide activities

4. Winter visitors are of high quality in distinct contrast to summer visitors who mostly are itinerant cotton workers.

5. About six major ruined villages and more than 100 trash mounds occur on the 472 acres of the monument. Visitors usually see only one village and the museum, but much further development is possible to provide other attractions.

6. A Custodian, a Ranger, and a half-time maintenance man compose a force which is inadequate during winter months,(yet places Casa Grande above most other monuments in the Southwest).

7. Visitors are all personally conducted through the ruins (32 minute average) and the museum (23 minute average). It is usually impossible for the small force to accompany visitors to other ruins on the monument. The museum is not arranged to function as a self-operating unit in emergencies or busy periods. There are few graphic or pictorial exhibits.

8. Visitors come at irregular times and joing them to an already-started party is awkward under the present system. There is no comfortable interesting place where visitors can be induced to wait for the next guided trip. Consequently each group has to be taken when it arrives, and in the past much aid has been given by headquarters personnel.

9. Under the present "2½ man", service is very uneven in quality. Some visitors receive very good service, while a party that happens to arrive an an inconvenient or busy hour receives poor service. It will always be impossible to have enough guides to assign one to each arriving party,

because such a procedure would lead to an enormous ranger force, busy only a small proportion of its time.

Visitors have little chance to sit down and relax under the present system and are fatigued at the end of an hour or less.

There is no chance to group parties according to quality; most information has to be gleaned by the auditory sense; independent persons resent "herding"; deaf persons miss much valuable information.

10. Guiding duties are very strenuous. Rangers must talk about six hours a day in busy seasons, and heat makes fatigue just as pronounced in the lesser traveled season. Monotony and fatigue produce uneven quality of service.

11. In fairness to the monuments, Casa Grande is and should remain on exactly the same footing as other Monuments insofar as headquarters help is concerned. Headquarters should relieve only at annual leave periods, times of sickness.

12. To best handle visitors with the present personnel, one guide should be stationed in the ruins, one in the museum. The museum attendant answers questions and greets all visitors, sending them to the ruins or holding them in the museum, which gives him a chance to make up parties according to community of interest. The men trade off when the ruins guide becomes fatigued. The ruins talk is given in a set sequence, and visitors receive a full trip whenever they join on.

13. Self-guiding trail trips to other ruins should be introduced. Guide leaflets should be prepared.

14. The museum should be made self-guiding so that it will function in time of emergency, and will be of interest to deaf and independent visitors. Exhibits should be made graphic. A lobby and more exhibit space is needed urgently.

15. When one man is off duty, the other should make trips at hour intervals.

16. Staggered lunch hours will be satisfactory if the ruins and museum are closed for a half hour from noon to 12:30 p.m.

17. The Custodian should be allowed the equivalent of four days time a month on administrative work; four days on improvements; two days for correspondence and reports. The Ranger should be allowed four days for improvements; one day for his reports. This would necessitate additional personnel.

18. A ranger-archeologist should be appointed to Southwestern Monuments

Headquarters, and should be detailed to Casa Grande from November through May, inclusive. This man can be used to great advantage in northern monuments in the other months.

19. The present system of closing the gates at five o'clock in the evening during summer months should be maintained, but certain portable signs should be used to explain to visitors that ruins and museum are closed but the picnic area is open.

****

BANDELIER BIRDS

By Betty Jackson

The traps are really getting results this month. I've banded 40 birds in all, belonging to 9 species. They are as follows:

Grey headed Juncos	16
Red backed Juncos	4
Shufeldt Juncos	2
Pink sided Juncos.	1
Pygmy Nuthatch	12
Rocky Mt. Nuthatch	1
Rocky Mt. Creeper.	2
Rocky Mt. Hairy Woodpecker	1
Woodhouse Jay	1

The Juncos are still interested in the fine chick feed I'm using, whereas all the others came for suet, in the Potter and Woodpecker traps.

I haven't much to report on birds seen around the canyon. They are few and far between, except the Juncos. These, by the way, feed on grama grass in the canyon and on the msea.

There are some robins on the Detached Section, and of course the Solitaires. There are a few of these also in the canyon. The ravens have increased to 22 by the last count. There has been difficulty in keeping the garbage pit covered, because birds, probably these ravens and buzzards, are industrious scavengers.

There are a lot of Rocky Mountain Hairy Woodpeckers on the monument, well scattered, however. I saw a large flock of Chestnut-backed Bluebirds, with what I am quite sure were a few Mountain Bluebirds.

The Canyon Wrens are still here, whistling on the sunny side of the canyon all day. One of them hides in the restored room right below the glass-covered wall painting.

I tried to get a picture of the turkeys Earl mentioned, but the film has not been developed as yet. It will probably turn out to be

one grand blur. He was flying by the time I snapped the picture. Other more common birds I will have pictures of soon, Nuthatches and such.

****

CONTACT STATISTICS

By Robert Rose

Opposite Page 494 in the December 1935 Monthly Report is found a tabulation of educational contacts among Southwestern Monuments for the Travel Year ending September 30, 1935. The occasion for compiling this information was the preparation of the Annual Report on Educational Contacts which is called for each year by the Washington Office. The recent Memorandum No. 92, together with Forms 16, were prepared and distributed to custodians for the purpose of getting a more accurate check on educational contacts at the monuments. For the want of even approximate records in the past, the tabulations are certain to be weak in spots. However, it is believed that as a whole they indicate the status of affairs in general for 1935.

Accompanying this discussion will be found a chart entitled "STATISTICAL SUMMARY OF 1935 EDUCATIONAL ACTIVITIES." Summarizations are made by individual monuments. Do not expect letter perfect accuracy in this chart for again it must be noted that the data are based on many monuments upon estimates. However, if there are appreciable discrepancies between the data on the chart and the actual conditions as you know them, write me about them and proper acknowledgement and revisions will be made in subsequent monthly reports.

At first glance the chart looks rather formidable but as it is tested for a few items it becomes quite simple. The following interesting observations seem to be worthy of note:

1. For Bandelier, Montezuma Castle, Tumacacori and Wupatki, field trip contacts are shown as exceeding the total travel listed for these monuments. Field trip contacts under existing conditions at these monuments do not, and cannot, exceed the travel count. This discrepancy is due to the travel figures submitted by custodians at the close of September 30, 1935, not being the same as travel figures totaled from the monthly reports month by month. Fortunately these discrepancies are not large and do not appreciably change the percentages on the form.

2. Custodian Tom Charles has submitted a number of sample forms 16 for different days at White Sands. Data he has submitted proves we have greatly underestimated contacts for White Sands. Contacts at White Sands will probably top 10,000. At any rate, records kept there in as much dedail as it practicable for a part-time custodian on a full-time job, are going to bring the facts out into the open.

Arizona Archeological Center Library

3. Accurate records at Bandelier, Canyon de Chelly, Montezuma, Casa Grande, Tumacacori, Wupatki and other monuments will doubtless reveal field trip contacts as something less than 100% of total travel. While it is desired that the records shall show this difference, it will not radically change relationships as worked out on the chart.

4. Custodian Carroll Miller's October, November, and December, 1935, figures indicate museum attandance as something less than field trip contacts. This will be brought out in the report for the current travel year.

5. Note the following details of interest:

Casa Grande:

Shows 200% contacted.

" about 1/4 the total contacts for Southwestern Monuments
" nearly 2/5 of all the museum contacts in the system
" about 1/6 of the total S. W. Monuments travel.

White Sands:

Shows about 1/6 of total travel.

Shows that if there were full time help and a museum the total contacts could be approximately 70,000 at that monument alone. Without this help and without these facilities, the very best possible is being done. This 70,000 would be the equivalent of about 1/2 the present total museum contacts in Southwestern Monuments and about 1/4 the present field trip contacts.

6. There is a great difference in time required for making group contacts among various monuments. At Casa Grande and Aztec, groups will average between 30 and 50 minutes while at Bandelier, De Chelly, Navajo, and others groups of the same size will require from an hour up to perhaps a half day or more. Hence in considering this chart on Statistical Summary, don't fail to take this into account. As this system is further developed a method of working in this time element will be perfected.

7. Note that museum contacts at Casa Grande and Aztec Total approximately 38,000 which is nearly 50% of the total museum contacts in the system. These are the only monuments at present having structures built specifically for museum purposes. There are 18 monuments listed as having no museum facilities whatever for visitors.

STATISTICAL SUMMARY OF 1935 EDUCATIONAL CONTACTS

MONUMENT	TRAVEL	EDUC. CONTACTS	PERCENT CONTACTED FIELD AND MUSEUM	TOTAL PERCENT CONTACTD	PERCENT TRAVEL IS OF TOTAL TRAVEL	PERCT. CONTCTS ARE OF TOTAL CTS.	PERCT FIELD CONTACTS ARE OF TOTAL FIELD CONTACTS	PERCENT MUSEUM CONTACTS ARE OF TOTAL MUS. CONTACTS
ARCHES	300	60-Field	20.0%	20.0%	0.2%	0.03%	0.1%	0.0%
AZTEC	10,738	10,738-Field 10,738-Museum	100.0% 100.0%	200.0%	5.4%	10.8%	8.5%	14.8%
BANDELIER	12,381	13,225-Field	100.0%	100.0%	6.2%	6.6%	10.5%	0.0%
DE CHELLY	988	958-Field	100.5%	100.5%	0.5%	0.5%	0.8%	0.0%
CAPULIN	24,000	4,810-Field	20.0%	20.0%	12.1%	2.4%	3.8%	0.0%
CASA GRAN.	27,345	27,095-Field 27,095-Museum	99.9% 99.9%	200.0%	13.8%	27.2%	22.2%	37.3%
CHACO	6,565	6,235-Field 6,235-Museum	95.0% 95.0%	190.0%	3.4%	6.2%	4.9%	8.6%
CHIRICAHUA	6,420	4,000-Field	62.3%	62.3%	3.2%	2.0%	3.2%	0.0%
GILA CLIFF	100	000	000	000	.1%	0.0	0.0	0.0%
HOVENWEEP	200	000	0.0	0.0	.1%	0.0%	0.0%	0.0%
MONTEZUMA	14,919	15,110-Field 15,110-Museum	100.0% 100.0%	200.0%	7.5%	15.2%	11.9%	20.8%
GRAN QUIVIRA	4,649	4,519-Field 4,519-Museum	97.2% 97.2%	195.0%	2.3%	4.6%	3.6%	6.2%
NTL. BRIDGE	700	487-Field	69.6%	69.6%	.4%	.3%	.4%	0.0%
NAVAJO	446	460-Field	100.0%	100.0%	.2%	.2%	.4%	0.0%
PIPE SPGS	4,896	1,686-Field	34.4%	34.4%	2.5%	.9%	1.3%	0.0%
RAINBOW	430	00	0.0	0.0	.2%	0.0	0.0	0.0%
SAGUARO	9,900	2,420-Field	24.4%	24.4%	5.0%	1.2%	1.9%	0.0%
SUNSET CR.	5,688	85-Field	1.5%	1.5%	2.9%	0.1%	0.1%	0.0%
TONTO	5,350	3,305-Field 5,398-Museum	61.8% 100.0%	161.8%	2.7%	4.4%	2.6%	7.4%
TUMACACORI	13,081	13,976-Field 3,425-Museum	100.0% 24.4%	124.4%	6.6%	8.7%	11.0%	4.7%
WALNUT	11,326	8,356-Field	74.0%	74.0%	5.7%	4.2%	6.6%	0.0%
WHITE SNDS	33,912	5,965-Field	17.3%	17.3%	17.1%	3.0%	4.7%	0.0%
WUPATKI	1,389	1,505-Field	100.0%	100.0%	0.7%	0.8%	1.2%	0.0%
YUCCA H.	300	000	0.0	00.0	.2%	0.0%	0.0	0.0%
EL MORRO	2,475	1,827-Field	74.0%	74.0%	1.3%	0.9%	1.4%	0.0%
TOTALS	198,478	199,342 (126,822-Field) (72,520-Mus.)			100.6% *	100.2%	* 101.1% *	99.8% *

*Check totals

RUMINATION

By The Boss

And again comes the stencil cutter's monthly cry: "Boss, it's time to ruminate!" By this we know that January is past history and we are here setting up a landmark to show how far we have come and which way we are headed.

Chief, the boys have put together another good Supplement. It has become a sort of habit with them.

We are lifting Tov's report on Tumacacori and are going to run it as a separate booklet in a new series of Southwestern Monuments Special Reports, of which this will be Number 1. I think it is a very definite contribution to the growing body of Tumacacori literature and should not be lost in the files. As it happens, the Second Special Report will probably deal with Tumacacori, as we expect it to be Paul Beaubien's report of the excavations last year. Other Special Reports are in the background and will come up in due time.

Fred Gibson, of the Boyce Thompson Arboretum, comes to our aid with some Peyote notes for which we thank him. I don't know whether or not you know it but Fred is a sort of a relative of the National Park Service, being a brother-in-law of Herb Maier, so we don't hesitate to go over and bother him a good bit with our problems.

Earl's method of handling the tree ring problem is good. We are waiting for some of the other men to come in with additions and variations and will probably have something more for next month. The need for this explanation is great because so many of our visitors have only a hazy idea of what it is all about and when they see that terrifying word, dendro-chronology, on a chart, they are willing to give up.

We were certainly pleased to get that nice letter from Dot and John Keur and are glad to share it with everybody on the mailing list because it shows you what our visitors think of our Monuments. I don't say that all visitors get as much pleasure out of their visit as these two do, the reason for this being that these two bring so much in the way of enthusiasm, energy and knowledge along with them. I have noticed that they always leave the man on the job pepped up when they make one of their all-too-infrequent visits.

Dale King, in his "Comments" gives a pretty good cross-section of some of our trails and tribulations at one of our twenty-five Monuments, and I trust you will find it interesting reading. We around headquarters have held several interesting Taurian sessions on this particular copy as it was coming through the mill, and there are still some differences of opinion among us as to the value of some of the suggestions here offered, though we have agreed to give them a trial and see how they work out. I wouldn't be surprised if we had some further reports on this a little later on.

Betty the Birdbander comes in with a nice article on her work the past month in which you get the idea that she is having a pretty good time trying to take pictures of wild turkeys, etc., and you are not wrong in assuming it, either.

As another evidence that we are visitor conscious, in addition to Dale's studies mentioned above, you will note that Bob Rose comes in with a flock of figures dealing with educational contacts. On the face of them we are bound to admit that figures never look so very inviting, but these will repay a little study. It certainly startled me to find, accoring to this tabular matter, that Casa Grande and Montezuma Castle have 58% of the total museum contacts and 42% of all contacts among the 199,342 contacts made in our twenty-five monuments. Granting that there must be some errors in this table, the above facts stand out so plainly that they cannot be questioned. It rather puts a point on the fact that these two are our best monuments to use for studying visitor reactions in both museums and ruins.

I might report to you here, since you don't get a copy of it, that the Broadcast seems to be doing pretty effective work along its own special line. It is an inside circular for our own aggregation and only goes outside upon written request, and I believe it is helping to bridge the miles down in this corner of the country and keep us all better acquanited. It is the fourth of our informational outlets and the four of them are going to cover our field pretty well. They are the Monthly Report; the Monthly Report Supplement; the Special Reports; and the Broadcast. Each has a definite job to perform and if we can do about half as much as we hope to do with them the job will be well done.

Incidentally, we were rather thunderstruck when a big eastern library wrote us that one page in their copy of last month's report was blank and would we please send them a fair copy. Does that mean those fellows read our stuff that closely? And here is one of the Big Shots in the archaeological field who takes time out to sit down and write us that the December Report is our all time high; that we are doing good work and to keep it up. Does such a letter make us feel good? We are perfectly willing to admit that it does!

Cordially,

The Boss.

SOUTHWESTERN MONUMENTS

MONTHLY REPORT

FEBRUARY, 1936



DEPARTMENT OF THE INTERIOR

NATIONAL PARK

SERVICE

SOUTHWESTERN MONUMENTS
FEBRUARY, 1936, REPORT
INDEX

CONDENSED GENERAL REPORT

Travel---------- 81
General---------- 82
Administrative---------- 82
Maintenance, Improvements, New Constr.--- 83
Activities of other agencies in Monuments 84
Flora, Fauna, Natural Phenomena---------- 84
Use of Monument Facilities by Public----- 85
Miscellaneous---------- 86

REPORTS FROM THE MEN IN THE FIELD

Aztec Ruins---------- 98
Bandelier----------111
Bandelier ECW Report------115
Bandelier Forestry Report-114
Canyon de Chelly---------- 88
Capulin Mountain----------116
Casa Grande----------108
Chaco Canyon---------- 93
Chiricahua---------- 89
Chiricahua ECW Report----- 89
El Morro---------- 98
Gran Quivira---------- 89
Montezuma Castle---------- 96
Natural Bridges----------116
Navajo----------116
Pipe Spring----------104
Sunset Crater----------103
Saguaro---------- 87
Tonto----------109
Tumacacori---------- 95
Walnut Canyon----------106
White Sands---------- 91
Wupatki----------100

HEADQUARTERS STUFF

Division of Education-----117
Educational Contacts Summary
Wildlife Report----------122-5
Branch of Engineering---------122-7
Capulin Geology----------122-8

THE SUPPLEMENT

Navajo Study Project, by Betty Budlong----------123
Bird Banding Notes, by John E. Fast----------125
February Bird Banding Totals----------128
Bandelier Birds, By Betty Jackson----------130
Date Seeds at Wupatki, by James W. Brewer, Jr.----------131
Seventeen Years Ago, Feb., March, and April, 1919, reports, by
Frank Pinkley----------133
Woollcott at Wupatki----------136

SOUTHWESTERN MONUMENTS
PERSONNEL

HEADQUARTERS, Southwestern Monuments, Coolidge, Arizona: Frank Pinkley, Superintendent. Hugh M. Miller, Acting Assistant Superintendent. John H. Diehl Associate Engineer. Robert H. Rose, Assistant Park Naturalist. Dale S. King and Louis R. Caywood, Junior Park Naturalists. A. T. Bicknell, Custodian on Special Detail. Robert L. Cole, ECW Clerk. Luis Castellum, Temporary Clerk-Stenographer.

GENERAL FIELD MEN: Charles A. Richey and Harry Langley, Resident Landscape Architects. J. B. Hamilton, Associate Engineer. J. H. Tovrea, Chief Engineering Aide. Andrew Clark, Topographer. Carl Schmidt, Rodman.

FIELD STATIONS:

1. Arches---Moab, Utah. J. M. Turnbow, Custodian.
2. Aztec Ruins---Aztec, New Mexico. Johnwill Faris, Custodian. Robert W. Hart, Ranger-Archeologist.
3. Bandelier---Box 669, Santa Fe, New Mexico. Earl Jackson, Custodian.
4. Canyon de Chelly---Chin Lee, Arizona. Robert R. Budlong, Custodian.
5. Capulin Mountain---Capulin, New Mexico. Homer J. Farr, Custodian.
6. Casa Grande Ruins---Coolidge, Arizona. W. J. Winter, Custodian. Charlie R. Steen, Park Ranger.
7. Chaco Canyon---Crownpoint, New Mexico. Thomas C. Miller, Custodian.
8. Chiricahua---Willcox, Arizona.
9. El Morro---Ramah, New Mexico. E. Z. Vogt, Custodian.
10. Gila Cliff Dwellings---Cliff, New Mexico. No Custodian.
11. Gran Quivira---Gran Quivira, New Mexico. W. H. Smith, Custodian.
12. Hovenweep---Cortez, Colorado. No Custodian.
13. Montezuma Castle---Camp Verde, Arizona. Martin L. Jackson, Custodian. Frank Fish, Ranger.
14. Natural Bridges---Blanding, Utah. Zeke Johnson, Custodian.
15. Navajo---Kayenta, Arizona. John Wetherill, Custodian.
16. Pipe Spring---Moccasin, Arizona. Leonard Heaton, Acting Custodian.
17. Rainbow Bridge---Rainbow Lodge, Arizona. No Custodian.
18. Saguaro---Tucson, Arizona. Paul Beaubien, Temporary Ranger.
19. Sunset Crater---Flagstaff, Arizona. J. W. Brewer, In Charge.
20. Tonto---Roosevelt, Arizona. Woodrow Spires, In Charge.
21. Tumacacori---Box 2225, Tucson, Arizona. George Boundey, Custodian. Martin Evenstad, Ranger.
22. Walnut Canyon---Flagstaff, Arizona. Donald Erskine, Ranger in charge.
23. White Sands---Alamogordo, New Mexico. Tom Charles, Custodian. Barry Mohun, Utility Man.
24. Wupatki---Flagstaff, Arizona. J. W. Brewer, In Charge.
25. Yucca House---Cortez, Colorado. No Custodian.

CONDENSED REPORT

Coolidge, Arizona
March 1, 1936

The Director
National Park Service
Washington, D. C.

Dear Mr. Director:

The Condensed Report for Southwestern Monuments for February, 1936:

TRAVEL:

	February, 1936	February, 1935	February, 1934
Aztec Ruins	287	278	374
Bandelier	252	294	65
Capulin Mountain	500	350	200
Casa Grande	3,043	2,923	2,571
Chaco Canyon	379	207	78
Canyon de Chelly	5	---	---
Chiricahua	300	---	---
El Morro	---	---	---
Gran Quivira	129	216	300
Montezuma Castle	436	1,167	1,035
Natural Bridges	---	---	---
Navajo	---	---	---
Pipe Spring	137	27	436
Saguaro	2,000	---	---
Sunset Crater	74	---	---
Tonto	724	599	---
Tumacacori	1,512	2,116	1,146
Walnut Canyon	187	---	---
White Sands	3,794	---	---
Wupatki	70	50	50
Yucca House	30	---	---
Actual Reported Registration	13,859	8,228	6,255

The ten monuments which reported both in 1934 and 1936 showed an increase from 6,255 to 6,745 --- 490 visitors, or 7.9%, or about one-twelfth.

The twelve monuments which reported both in 1935 and 1936 showed a considerable decrease; from 8,228 to 7,474 --- 754 visitors, or 9.15%.

Thus it would appear that February, 1936, as a travel month was one-twelfth better than the same month of 1934; about 9.15%, or approximately one-tenth poorer than the same month in 1935. Poor travel weather has been general all over the Southwest.

GENERAL

010 MATTERS OF UNUSUAL IMPORTANCE

TONTO---Woodrow Spires, in charge, was able to stop a party of pot-hunters who were excavating on the shore of Roosevelt Lake. Arrangements now perfected with the Forest Service will prevent much vandalism in this area in the future. See page 109.

WUPATKI---Plans well under way for a small arts and crafts exhibit June 5 of the handicraft of the Navajos of Wupatki Basin. Mr. and Mrs. Brewer, in charge, doing excellent work. Museum of northern Arizona cooperating to full extent. It is hoped the exhibit will become an annual affair, and will aid in promoting a renaissance of old Navajo art in the region. See page 102.

020 WEATHER

The first half of February was relatively warm and conducive to travel, but weather became stormy during the latter portion. Snow made impassable roads to the following monuments: Canyon de Chelly, Yucca House, Hovenweep, and El Morro. So much precipitation argues well for spring range conditions, however. Tonto Basin and other southern cattlemen report the finest grass expectations in many years.

100 ADMINISTRATIVE

120 Monument inspections by

121 Superintendent Pinkley inspected the new residence at Canyon de Chelly February 6.

122 Special Field Representatives

V. W. Vandiver, regional ECW geologist, spent several days studying the old lake bed at White Sands.

A. E. Borell, regional ECW wildlife technician, spent several days at White Sands concerning work being done there under the Resettlement Program.

Norman Smith, junior ECW geologist, spent most of the month at Bandelier working up popular interpretation of the region's geology for future guide and museum use.

123 National Park Officers

Acting Assistant Superintendent Hugh M. Miller inspected the Canyon de Chelly residence February 6 and 26.

Ansel F. Hall, chief, Field Division of Education, visited Aztec Ruins and Navajo during the month.

Resident Landscape Architect Charles Richey during the month made trips to Canyon de Chelly, White Sands, Chaco Canyon, Aztec Ruins, and Bandelier.

Resident Landscape Architect Harry Langley made inspections at

Chiricahua and Tonto.
Associate Engineer Jack Diehl reached Chiricahua, Tonto, and Bandelier, on business trips.
Jr. Naturalist King made inspections at Tonto, Montezuma Castle, Bandelier, and Saguaro. He also visited Walnut Canyon and White Sands.
Jr. Naturalist Caywood visited Wupatki February 17.

180 PUBLICITY

WHITE SANDS---"Fortune" for February carried a picture of White Sands.
Southwestern Headquarters prepared 2,000 copies of a small informational folder for White Sands.

200 MAINTENANCE, IMPROVEMENTS, NEW CONSTRUCTION

210 MAINTENANCE, UNUSUAL

CASA GRANDE---Faulty sewer system has to be pumped out into open trench. An old engine and pump temporarily solve the difficulty, but the system needs repair urgently. See page 109.
Six feet of ruins wall fell recently. Stabilization funds needed badly. See page 109.

TONTO---Entrance road and trails in bad shape due to heavy rain. Trail foreman working on trails, but is unable to maintain entrance road.

220 IMPROVEMENTS

CHACO CANYON---Temporary cattleguard constructed near Fajada Butte.

SAGUARO---Facilitating building owned by University of Arizona remodeled by Temporary Ranger Beaubien into convenient office.

WUPATKI---Two roofs of prehistoric rooms inspected and repaired.
Final sand covering put on another roof.
Room 72 reconstructed to 4'6" height for drainage control.
Wupatki spring output increased about 400 gallons by new pipe and valve.
Set of stone steps replaced with better ones. See page 100.

230 NEW CONSTRUCTION

BANDELIER ECW---10,000-gallon storage tank formed and poured. Laying of intake and return pipes in progress.
Additional underground power line cable from Headquarters Building to campground comfort station installed.
Planting and obliteration continued.
Museum Building to lintel height and portal connection with Headquarters Building placed. Timber crew shaped vigas, lintels and beams all month.
Quarters No. 1 walls at 2' average height.
Carving crew worked all month. Shipment of completed Wupatki signs were being crated at end of month.

Quarry crew worked continuously all month.
Some maintenance on canyon floor and entrance roads.
---In general, progress was good, considering inclement weather and reduced company strength. See page 115.

CANYON DE CHELLY---New residence completed.
Some material has arrived for water and sewer systems. See page 88.

CHIRICAHUA ECW---Sara Deming Trail now completed for 5,400 feet.
300 feet completed on Massai Point-Balanced Rock Section.
800 Square yards of bank sloping on Bonita Canyon Highway. Excess material used to obliterate borrow pits. A total of 1,000 cu. yds. moved.
Headquarters Ranger Station 90% complete.
Bath House 70% complete.
Chiricahua-Portal telephone line now under construction for 3/4 mile.
See page 89 for detailed report.

GRAN QUIVIRA---Pipe, rods, and pumping equipment on hand in readiness for construction of pump house.

300 ACTIVITIES OF OTHER AGENCIES IN MONUMENTS

320 Cooperating Government Agencies

CHACO CANYON---Soil Conservation Service, with only 10 men on the crew, doing good work. 4,000 cu. yds. of dirt arranged in arroyo-preventing dikes on canyon floor. 1,200 cu. yds. of rock quarried for future revetments. 115 sausage dams completed in side arroyos. See page 94.

320 Cooperating Agencies Other Than Government

At the annual meeting, February 4, of the Northern Arizona Society for Science and Art an amendment to the constitution was passed providing one member of the Board of Trustees to be selected from the U. S. Indian Service, or the National Park Service. See page 102.

350 Donations and Accessions

CANYON DE CHELLY---Custodian Budlong was loaned two interesting stereoptican photos of Canyon de Chelly taken on the Lieut. Wheeler Expedition of 1873. These photos will be duplicated for National Park Service files, and new pictures will be taken from the same location to show detericration in the White Lower Ruin. See page 88.

400 FLORA, FAUNA, NATURAL PHENOMENA

410 Ranger, naturalist, and guide service

SAGUARO---A convenient botanical trail has been laid out by Temporary Ranger Beaubien near the Ranger Station. Has no appearance of artificiality, and aids in contact procedure at this rather difficult

SAGUARO FLORA (CONT.)

monument. See page 87.

430 Archeology, Prehistory, History

WUPATKI---Partial fossil footprint (Cheirotherium?) discovered by James Brewer in Moencopi Sandstone. See page 101.
Mr. Brewer also discovered two date seeds, apparently washing out of a prehistoric midden. See page 131.

440 Insect Control

CASA GRANDE---Dr. Donald DeLeon inspected mesquite infestation. Sample has been sent for study. See page 108.

460 Birds

GENERAL---348 new birds were banded this month in Southwestern Monument Banding Stations, bringing the fiscal year's total up to 1,023. Casa Grande, in the midst of its banding season, made a particularly good showing. See pages 125, 128.

BANDELIER---See page 139 for February list. Turkeys feeding in canyon.

CASA GRANDE---Owls, wrens, phoebes, other species have started nesting.

GRAN QUIVIRA---Hundreds of robins and bluebirds wintering at this monument. Feed on juniper berries.

SAGUARO---Two Curve-billed Thrasher nests within 75 yds. of Ranger Station.

WALNUT CANYON---Two hen turkeys seen in front of Ranger Station.

WUPATKI---See page 102 for February list.

470 Animals

BANDELIER---Beaver which are invading Frijoles Canyon have ceased upstream progress and may be starting colony. See page 113.

WALNUT CANYON---Ten deer seen on monument.

WUPATKI---Three antelope seen. Antelope Ground Squirrels coming out of hibernation.
Trapper between two sections of monument has shipped more than 100 coyote and bobcat skins this winter. Also four badger skins. See page 102.

500 USE OF MONUMENT FACILITIES BY PUBLIC

TRAVEL---See page 81.

500 USE OF MONUMENT FACILITIES BY PUBLIC (Cont.)

530 Newsworthy visitors

BANDELIER---Clint Anderson, WPA representative for 11 western states; E. J. Johnson, International Rotary president; W. J. Jenks, vice-president of Norfolk and Western Railroad; Charles H. Lamke, mayor of Albuquerque.

CASA GRANDE---George Parker Winship, author of "The Coronade Expedition, 1540-1542" in the 14th Annual Report of the Bureau of American Ethnology; A. M. Hyde, former Secretary of Agriculture; former Senator David A. Reed of Pennsylvania.

TONTO---Frank Lloyd Wright, noted architect, and a group of proteges.

WHITE SANDS---Mrs. Ruth Woodman, associated with radio program department of 20 Mule Team Borax Co.; Mr. and Mrs. Tom Cramer of U. S. Potash Co.; Mrs. Inez Sizer Cassidy of New Mexico Magazine; Mrs. Elizabeth Willis de Huff, Harvey lecturer; D. M. Wooten and I. C. Bruce of Rock Island Railroad regarding a detour including White Sands.

WUPATKI---J. E. Shirley, manager of transportation at Grand Canyon.

900 MISCELLANEOUS

Mail Count

Mail:	
Incoming personal	654
Incoming Government	1,126
Total Incoming	1,780
Outgoing, Official only	1,413
Total Mail	3,193
Telegrams:	
Incoming	38
Outgoing	47
Total telegrams	85
Grand Total pieces handled	3,278

Respectfully,

Hugh M. Miller,
Acting Superintendent.

REPORTS FROM MEN IN THE FIELD

SAGUARO

By Paul Beaubien, Ranger

Have been here two months now and still have some problems unsolved. With only one car reaching the ranger station for each four or five visiting the monument, this ranger isn't doing his duty. Junior Naturalist Dale King stopped a few minutes last Sunday. He saw about 100 people between the north gate and the ranger station but there was only one car at the latter place when he arrived. Then, some of the parties that do reach the station do not stop or only wait long enough to get road information. Of the estimated 2,000 people entering the monument this month, 503 reached the ranger station while only 382 can be listed as educational contacts.

Had quite a bit of rain this month, and Pantano wash, between here and Tucson, was unfordable on several occasions. Also, the rodeo at Tucson seemed to cut into the normal run of visitors.

Am beginning to feel proud of my knowledge of desert plants (there are more plants here than just the cacti) but also realize I'll be able to learn something more every day for some time to come. Alfred Whiting, an ethnobotanist from the University of Michigan, has already made three trips here to help me get educated. He is now doing some graduate work at the University of Arizona but spent last summer working in northern Arizona. He is largely responsible for the trail signs at Walnut Canyon.

With material furnished by the University of Arizona, I have finished working over one end of the facilitating building on the monument. So have respectable quarters, but do need a water supply.

Have a loop trail about 60 yards in length, which leads by some 40 species of the more interesting plants to be found here. These plants range from tobacco to saguaros. Many of them have been transplanted from short distances through the kindness of Mr. George Keller, a foreman from CCC Camp SP. 11-A. I understand that transplanting isn't something the Park Service always approves but it seems the thing to do here. After all, this is an outdoor museum and not a garden. (Ed. Note: The transplanting has been done well -- it has no appearance of artificiality.)

For nature notes, I'll add there are two Curve-billed Thrasher nests within 75 yards of the ranger station. One, containing two eggs, was noted February 16, while the other, with three eggs, was seen February 23.

****

CANYON DE CHELLY

By Robert R. Budlong, Custodian

We have very little to report this month. However, our records show a marked increase in visitor attendance for this month, compared with the same month last year. The increase is exactly 400%. Last February we had but one lone visitor. This month we had five. Of these, two were local residents. The remaining three were government officials on an inspection trip. Our two bona fide visitors were unable to get to the canyon rim, the roads being too muddy, so they were taken to the nearby sand dunes and immediate vicinity. Time devoted to this group, ninety minutes. These dunes constitute one of the many attractions at this national monument, and many of our visitors go to see them.

Weather for the month varied from miserable to worse. There were four days of very high winds. Precipitation occurred on ten days, with a total of .65 inch. Maximum temperature, 59 degrees, minimum 8. On the 16th we had snow, hail, sleet, rain, high winds, a sandstorm, and some lightning and thunder. Roads have been nearly impassable most of the month. The canyons are still well filled with flowing water, and no attempts to enter them have been made during the month

On the 6th we were paid a very short visit by Superintendent Pinkley, Hugh Miller, and Chuck Richey. As usual, they didn't stay very long, departing the same day they arrived.

The Custodian's Residence is not yet finished. The contractors had hoped to ask for an acceptance on the 23rd, but the work has gone slowly.

Some of the material has arrived for the remaining work on the water and sewer systems, and it is hoped that before many more months have passed the house will be supplied with water. The water reservoir must be waterproofed, pipe must be laid from the new well to the reservoir, a pump house must be built and pumping machinery installed, and a supplementary septic tank must be constructed.

One of the officials of the Soil Conservation Service recently sent me two very interesting photographs of Canyon de Chelly. They are stereoscopic photographs taken by Lieutenant George M. Wheeler's Expedition of 1873. One is of White House Ruin, the other of the "Circle Wall" in Canyon de Chelly. In the former, the upper ruin at White House appears exactly as it does today, but the lower ruin is far larger. I am rephotographing these prints for the files of this national monument. When vegetation returns, with warmer weather, I shall take other stereoscopic photographs of these two subjects from exactly the same locations as these old ones, sending a set to the official who so kindly sent me these early photographs. The spelling of the name of the canyon on these early prints is very interesting. It is "Cañon de Chelle."

****

CHIRICAHUA

By Wm Stevenson

I herewith submit the following travel report for the month of February.

During the month 300 visitors arrived in 65 cars, the majority of the tourists arriving the last week of the month.

In view of the increasing travel, I am designating two enrollees to send as guides for the month of March.

****

CHIRICAHUA E.C.W.

By Wm Stevenson, Project Superintendent

I submit herewith the following report for the month of February.

Sara Deming Trail was completed to the old Balanced Rock Trail this month, making a total of 5400 feet. The crew started working on the Massai Point Balanced Rock section February 21. Echo Trail shows 300 feet completed this month.

Eight hundred square yards of bank have been sloped on Bonita Highway. The material has been used in the obliteration of borrow pits on the highway. One thousand cubic yards were moved.

The Ranger Station at Headquarters Area is 90% complete and the Bath House 70% complete. Work on the buildings was retarded this month by the illness of Carpenter Foreman French.

The Chiricahua-Portal Telephone Line has progressed well during the month. Three-fourths of a mile is now under construction.

We were visited this month by Harry Langley, Resident Landscape Architect and Jack Diehl, Park Engineer.

****

GRAN QUIVIRA

By Wm. H. Smith, Custodian

Travel is far below the regular mark for the month, but Mr. Boundey tells me that it has snowed every other night since I have been gone. So much snow has kept the roads in such a bad state that I have only 129 visitors entering the monument in 48 vehicles. This is the poorest month yet this year.

Delivery has been made on the pipe and roads and pumping equipment for the well here. Now all we need to have water here is to get the material installed, and we are looking for the foreman in to do the work some time in the next few days.

Taking the month here as a whole it has been an unusually quiet month before I left and Mr. Boundey says that there has been but little of interest since he came here. But perhaps I had better let him tell that part of the story as I am going to ask him to send in some material for the report and tell you what his impressions are of the "best monument in the southwestern group."

Mr. Boundey and I changed locations for the first few days of February, and I found the Tumacacori Mission very interesting and was surprised to find it in such a good state of preservation, although it is not as old by a goodly number of years as our mission here. On my way back from the Tumacacori National Monument I came by the Casa Grande Ruins and spent a short while there. That was my first visit to headquarters.

Mr. A. T. Bicknell conducted the group that I was in through the monument and let me here say that Mr. Bicknell can make it mighty interesting for his visitors. Every minute of the trip was interesting. The museum collection at the Casa Grande is so nicely arranged and is such a complete collection that if I was not afraid it would give the headquarters staff the big head over it I would have to say that it was more interesting than the New Mexico State Museum at Santa Fe.

Well, at any rate they are both very interesting monuments, but in the future years when Gran Quivira has been as well developed as they are and there are good roads by it, will naturally in my opinion be far superior to either of the monuments.

****

By George L. Boundey

Mr. Smith has asked me to add a few lines to his monthly report.

We reached Gran Quivira the night of February 4. The last 60 miles the roads were very bad. The first two weeks it snowed every other night with much wind to pile the drifts.

Our visitors, tho not great in number, were all pleased with their visit. One party of four from Albuquerque came the very worst day we had and remained two hours. I found that visitors who came in and warmed up before visiting the ruins seemed to get more from their visit than those who were chilled. Mr. Smith's idea of a warm office or museum where people could rest for a bit before making the tour is very good.

One of the most interesting features of this country to me is the immense number of birds, especially robins and blue birds, which winter here. Usually there are hundreds in a flock and they feed on the juniper berries which are so plentiful here in the forest.

Late one evening I had two Pueblo Indians from the vicinity of Santo Domingo Pueblo. They were much interested in the Pueblo ruins here, and I am sure I learned far more from their description of the kivas, plazas, etc., than I could have given them. Their idea of the water supply is that cracks or fissures have occurred in this lime stone formation and absorbed the springs on which these ancient inhabitants were so dependant.

A photographer, who is making a tour of all the missions in the United States and Mexico, made us quite a visit one day. Two artists spent part of a day sketching and photographing the church ruins for some advertising material the Chamber of Commerce of Mountainair is having placed along the highways.

Gravelling of the first 13 miles of the highway between Gran Quivira and Mountainair is now under way, and Dr. Buer of Mountainair says work on the Mountainair end of the highway is to start soon. With good roads from the north and east, this monument will never lack for visitors.

****

WHITE SANDS

By Tom Charles, Custodian

Mr. Miller of Chaco must have been impressed with the crowds at the White Sands when he reported that we had 85 cars an hour, "on off days." I'm like the man with the wife who said his horse was "sixteen feet high" when she should have said sixteen hands high. If Miller says 85 cars an hour it is 85 cars an hour. I'm for him. "The more I see of Miller, the better I like Chaco."

I would dislike for any of the Park Service Fraternity to think that I am "tooting my own horn;" far be it, but surely it will not be amiss to call attention to the fact that for three consecutive Sundays, when blizzards and sub-zero weather were sweeping the rest of the country, children were playing barefotted in the Great White Sands.

The trek of eastward traffic has begun. Last Sunday I contacted a family from South Dakota and while the baby played barefocted on the warm hillside the father told me that he heard over the radio that morning that it was 42 degrees below zero in his home town. They had been in California and it was urgent that they get home but when they left the Monument they said, "This weather is hard to resist, we may be in no hurry to leave." Similar incidents occur each Sunday.

Possibly it is the weather which is increasing the percentage of visitors from the total traffic on the highway. Last year we calculated that 18% of the total traffic stopped and played in the Sand. The January count showed that about 23% stopped, but the February count shows 31.3%. Therefore, while the travel has dropped from 134 cars in 8 hours in

December and 85 cars in 8 hours in January to 49 cars in the same time in February, our actual visitors have not decreased in proportion. We had an average of 43 cars stop each day in December, 35 cars each day in January, and 26 cars each day in February. Barry's count shows approximately four people to the car. At that rate we have had 2808 week day visitors from January 20 to February 20. In addition to these we had 986 Sunday visitors. The week day number is arrived at by figuring the percentages of three eight hour counts each week and multiplying the average per hour by 14 in order to get the 24 hour total. This gives us a total of 3794 visitors from January 20 to February 20.

It is disappointing that only a third of the visitors see the Heart of the Sands. Seeing the Sands from the highway is like trying to see the Carlsbad Caverns from the mouth of the cave. And the sad part of it is that it is our fault. There should be some display of the beauties and pleasures of the Heart of the White Sands brought up to the highway. The small folders which you have recently printed will help, but the goal is a museum and a continuous ranger. I feel that I owe the tourist the same sales talk and the same effort as though It were costing him $2.50 to get in. When we properly "sell" this monument to the traveling public it should increase our visitors to 80% of the traffic.

Vincent W. Vandiver, geologist, spent three or four days at the monument this month studying the old lake bed. Apparently he found it very interesting. Watson Ritch's boys guided him to the place where they found the skeleton of a mammoth several years ago; he drove over the Sands and across the lake and came out, down toward the beds of bicarbonate of soda. In fact he took in the outline of the old lake bed quite thoroughly. He stated that the geology of that section is worth a few months' study.

Among other interesting visitors this month was Mrs. Ruth Woodman of New York City, in company with Mr. and Mrs. Tom Cramer of the U. S. Potash Company. Mrs. Woodman is out in the interest of radio programs for the Twenty Mule Team Borax Company

Inez Sizer Cassidy, Editor of New Mexico Arts and Artists in "New Mexico" Magazine and head of the State Writers' Project, visited the Sands in company with Mrs. Elizabeth Willis De Huff who puts on illustrated lectures nightly at the La Fonda Hotel in Santa Fe, for the Santa Fe railroad. Their reaction to the Sands was shown in Mrs. Cassidy's exclamation "This is one place I'm satisfied - it is truly one of the wonders of the world." Mrs. De Huff asked for pictures of the Sands that she might use them in her lectures at the La Fonda.

D. M. Wooten, manager of Vacation travel of the Rock Island Railroad from Chicago, and I. C. Bruce, General Passenger Agent from El Paso, visited the Sands with the idea of eventually putting on bus accommodations from their passenger trains at Alamogordo to the White Sands.

WHITE SANDS (CONT.)

Chuck Richey was in for a few hours, enroute to California and Mr. and Mrs. Borrell have returned from Washington and are still here.

Eight or ten members of the Masonic Grand Lodge of Texas spent Sunday at the Sands. One of them suggested that he felt like Mark Twain when he saw the Pacific Ocian, he "Thought it was a success."

You may also be interested in the fact that Lieut. Bibo from the Reclamation Camp below Las Cruces brought 150 men over for a day in the White Sands. They occupied 7 trucks and the officer's car and drove approximately 80 miles each way.

That "Fortune" for February carried a picture of the White Sands under the caption, "The Fine White Sands of Alamogordo." And that we had a letter from Switzerland wanting pictures of the White Sands.

That two Alamogordo business men were in the Heidelberg restaurant in Chicago and found that all the ash jars in the elaborate lobby were filled with White Sand from Alamogordo.

That Jack Voyde and Wilmer Hamilton of this place almost started a riot in their old home towns in Texas when they took White Sand and poured it in piles in the grocery stores. The natives thought, of course, that it was sugar.

I was also interested in the fact that Mrs. Fred Kasson, a total stranger, of Elk Falls, Kansas, asked for help in preparing a White Sands program for her reading club.

But probably the best news of all is that we have had some dandy Southwest winds already and the hills are higher, whiter, cleaner, more beautifully ripplied and more free from tracks and trash than they have been in weeks. We have had a most excellent job of house cleaning already this spring.

As we go to press, who should walk in but George and Mrs. Boundey, headed back to Tumacacori. You know, White Sands is George's old stamping ground, when he and Gene' Baird and Eugene Manlove Rhodes were boys together. I often wonder if those boys had anything to do with making the "giants tracks" or burying the mammoth or sowing any of the wild oats which we find out there.

****

CHACO CANYON

By Thomas C. Miller, Custodian

General:

Weather conditions were excellent for the first half of the month; visitors were coming in good and the roads were nice and dry. From the 15th of the month to the present date, the roads have been in the worse

condition than they have been any other month this winter. At times the roads have been impassable, as they are today. If this report should be late you will know that I could not get to the railroad in time to mail it. Any way, I am planning to start in with it early tomorrow morning.

Weather Statistics:

Maximum for the month was 51 on the 21st. Minimum was 9 above on the 5th. Precipitation, 1 inch of rain and melted snow was recorded for the month.

Travel:

379 people entered the monument in 144 automobiles, coming from the following states: Arizona, California, Colorado, New Mexico, Oklahoma, Texas and South Dakota.

Special Visitors:

Custodian Faris was a visitor on the 4th. Mr. Faris made the trip to a good monument for a good cause. The 3/4-ton Dodge truck was returned to Aztec Ruins and Johnwill brought Mr. Williams home. We were very glad to return the truck in good shape to Aztec Ruins, and we surely appreciate the loan for the past several months.

Resident Landscape Architect Richey was here on the 10th. to inspect our Soil Conservation Camp.

Soil Conservation Service:

The work with this camp has proceeded in a satisfactory manner. Only a small crew of 10 men are employed. To date 4000 cubic yards of dirt have been moved and placed in dikes along the canyon floor, to turn water into the main wash at designated places. This will serve to prevent new arroyos being made. 1200 cubic yards of rock have been quarried and stacked for future use in the revetment work. 115 sausage dams have been made in the side arroyos. These dams are made by excavating the earth on both sides of the arroyo, then wire mesh is used to keep the rock in place.

Chaco Fence:

The Cook & Ransom Construction Company completed their contract and departed on January 27. The final estimate was made by Associate Engineer Hamilton.

During the month of February a temporary cattle guard was constructed near Fajada Butte. The material was purchased locally.

The Chaco Wash has been up for the most part of the month. On several occasions a little more than three feet of water was recorded on our water gauge at the bridge. The water gaps in the wash are no more, that is they were covered up with ice, snow, driftwood and sand, and are

now under three feet of water, which means a new set of water gaps when the water goes down.

I think I know how to build a good water gap that will not have to be replaced every time it rains. Since I am the one that has to maintain the fence, with your permission I will build them my way, it might not be any better looking, but it will be much easier and cheaper to maintain.

****

TUMACACORI

By M. O. Evenstad, Park Ranger

Custodian Boundey has just returned from Gran Quivira National Monument, and has delegated to me the task of getting out the monthly report for February. So here goes:

During the period of January 26 to February 25, 1936, we had 1,512 visitors. These people came from 35 of the states and the following foreign countries: Canada, China, France, Germany, and Mexico. Ten different parties represented Canada, and we had a like number from our neighbor from the south.

A high percentage of our visitors are now from out of the state, and a large number of these from the eastern and north central states where there is now so much sub-zero weather. They are either lucky in choosing this winter for a trip to our Sunny Southwest or else they had a tip from the weatherman. We also find a fair representation on the register from this state and the neighboring states of New Mexico and California. Quite a few of the visitors go into Mexico for a short trip, judging from their conversations.

On the whole, the visitors for the last month grade quite high in appreciation and interest. The four-day rodeo at Tucson, 20 to 23, did not result in any noticeable increase in the travel, as the corresponding days of the previous week proves to be slightly over the rodeo week in travel. Everything in Tucson was crowded to overflowing as far as accommodations for tourists were concerned, as several of our parties told me they had to drive to Nogales to find a place to sleep.

After supper on the 21st, the family and I bundled into the sedan and drove in to Tucson to hear the famous violinist, Jascha Heifetz, and we felt well repaid for the trip, even though we had to occupy stage seats, not other being available. I also found several of the Casa Grande Ruins bunch occupying similar seats at the recital. Really, didn't know that so many of them were musically inclined.

On the evening of the 7th, Dr. W. H. Smith, with Mrs. Smith, and his son, Elbert, with family arrived for a stay under the transfer plan recently inaugurated by headquarters. We were, indeed, glad to make their acquaintance and enjoyed their visit with us very much. They

had a little bad luck in getting here, as they had to be towed in for the last five miles. The doctor almost convinced me that he has a great monument at Gran Quivira, and if he gives as interesting a talk to his visitors on Gran Quivira as he gave us here, that monument only needs good roads to make it one of the show places of the Southwest. They left for Gran Quivira on the 19th to return via headquarters and Casa Grande Ruins.

The weather during the month has been quite moderate, with a good many partly cloudy days, and a couple of sprinkles of rain. The nights have been quite cool with frost a good share of the time. There has been enough wind to pump our water without any help from the gasoline engine. Many of the trees along the Santa Cruz River are bursting forth with foliage, and a little more rain should bring out some of the slower varieties. Various birds are busy feeding on the grass seeds on the monument, and there are many indications that spring is fast approaching.

The month has been taken up with the customary routines, with guide work getting the lion's share. Our need for some kind of a museum is becoming more apparent every day, judging from inquiries by the visitors. The installation of a museum, with suitable exhibits would very likely double the time of the tourists stay, and would also, no doubt, result in increased travel.

A conservative plan on some restoration of certain units would enhance the value of the monument, without a doubt. Personally, I think that Tovrea's report on Tumacacori is a very good document, and serious consideration should be given his recommendations. I think he has drawn a good picture that is good food for thought. There may be administrative objections to his idea of a museum, but there is a lot of merit to it too. With this, I will close the report, hoping that you will overlook the fact that it is rather hurriedly written.

****

MONTEZUMA CASTLE

By Frank Fish, Ranger

I report the following as the February history:

Weather:

The first half of the month was ideal from the standpoint of the visitor, sunshiny days and cool, crisp nights. The last part of the month has been stormy, resulting in a sharp drop in visitors.

Roads:

During the month a section of the State Highway between Prescott and Jerome has been closed from 10 a.m. to 2 p.m. daily. This leaves the Cherry Creek road as the only means of travel to the Monument from Prescott. While the road by Cherry is not considered bad by local

people, visitors from the east in some cases return by Oak Creek, Flagstaff, or Ashfork to Prescott in order to escape it.

Visitors:

Guests at the monument number 436 for the month. Of this number 362 registered and 74 were locals, repeaters, or did not register. One party from Eaton's Ranch, Rimrock, has been down six times in the last 10 days, bringing someone different each time. One remark by a member of the above party, although in the nature of a bouquet, reflects more to the Park Service than to any individual, so will pass it on. "Some of us hard-boiled business men that are always kicking about taxes and the cost of government think that the money spent to preserve things of this type is worth while."

One party of CCC boys was in during the month from the Mayer Camp. It was of much interest to me to compare the actions of this group with any other group of young men, even from the schools of higher education. Instead of throwing candy wrappers, cigarette stubs, etc., around, I was repeatedly asked where to place them.

Official Visitors:

Dale King, junior naturalist, made an inspection of the monument on the 14th. We were very glad to have him and hope to see him back again some time in the near future.

Official Leave:

Custodian Jackson was called to San Antonio, Texas, on the 11th, due to his brother's illness. A recent letter to Mrs. Jackson tells of his brother's death. Mr. Jackson is expected home in a day or two.

General:

During the past month, spare time was spent in giving the monument from the parking area to and including around the ruins a thorough raking and cleaning.

Larger fallen limbs suitable for use have been gathered and added to the fuel supply.

The guest ranches report good business with all accommodations taken and a number of future reservations made.

New mines are being developed in the nearby territory, with the R.F.C. offering loans to those prospects showing required indications of good ore bodies.

Range conditions are excellent so, all in all, the present indications are good for this year.

****

EL MORRO

By Evon Z. Vogt, Jr.

Travel to El Morro for the month of February has been absolutely nil., unless I could be called a visitor. I spent a day at the monument on the 8th of the month. The roads were practically impassable at that time, but by leaving early in the morning when the ground was still frozen, I managed to drive the car to within a half a mile of the monument. Where the road is not blocked with snow it is a bottomless boghole. From Ramah north there was very little snow at that time, but from Ramah south the country was covered with a foot of hard crusted snow. This morning we found eight inches of wet heavy snow on the ground. When this melts the ruts that lead on down the middle of the El Morro Scenic Highway will be deep enough to stick even the cars with the highest clearance. If you get out of the ruts you slip into the ditch at the side, so it's just like jumping off a hot stove into a bed of cactus. You'll be a nervous wreck in either place.

One can make a check-up on the visitors by looking at the snow-blocked entrance road. Nobody has bucked those drifts yet, nor will they for a couple of weeks. The register is blank and a cold wind sings through the pines. Unless there is a let up in the current weather, I predict light travel for the month of March also.

The premises are in good shape. The ranger's cabin has not been bothered. The trails are bound to erode somewhat from the melting snow. The only thing that will have to be watched closely is the water cove. Another week of blizzards and enough snow will fall, melt, and run off the top of the rock to fill the pool, which will run over and wash an arroyo down through the reclaimed area. If it keeps on snowing, next week end will see me at the monument bailing water out of the pool and pouring it where it will run off and do the least damage.

****

AZTEC RUINS

By Johnwill Faris, Custodian

The month of February has rolled around so fast that it is time to write another report before we can get settled down to the fact that February is here at all. Our visitors total 287 which is slightly above that of last February. Mr. Hart has been complaining that the bad weather we have been having of late certainly cut in on our visitor run, but I find upon looking up this same month a year ago, that our work and the number of visitors were both affected by severe weather. So I guess that this is about the time of the year that we must expect some interference. Comparing our section with others around us, this has been a very mild month, and only a few days have been disagreeable.

The few days we were not able to work this month has made quite a lull in the work that is being done with our CCC boys. One day that they miss means actually many man days, and we are sincerely hoping that the Gods are on our side for the balance of the sixth enrollment period,

since we have a mighty big program outlined, and we hope to finish before the first of April.

Regular monument activities have been no greater than usual. It was our pleasure to have with us this month a representative from both the Landscape and Educational Divisions. Mr. Richey was in and went over the E.C.W. work, and only a day or so ago, Ansel and Mrs. Hall stayed overnight with us. It was Mrs. Hall's first visit, so we know that the triplets will hear about a mighty interesting ruin. One feature I didn't like particularly was the fact that Mr. Hall called from Gallup and told us he was coming, and Bert Hart swept the museum three times that afternoon. You can see, Boss, that if we had many visitors like that and they all informed us they were coming in advance, that the cement floors could not stand up under the strain. Anyway, the lobby floor looked mighty nice, and we were mighty proud of it.

Am a little interested, Boss, in the remarks of Dale in his comments on visitors, and the inference that all personnel should be given a day a week off in order that they not become stale and thus lose the efficiency they might otherwise deliver. Will the facts prove that seven days a week make one stale and less efficient? What about yourself and some of the rest of us, that never thought of a day off for months at a time? Did we become stale and less efficient? Did service rendered suffer in the early days because we did not get a day a week off, and an hour for lunch? Is it not a little queer that seemingly today a man's efficiency must be so carefully guarded that he is in need of these rest sessions, days off, etc., and yet that same individual can play bridge, dance, until all hours of the night, and he never gives a thought to the efficiency he is always crying about. I certainly do not mean that such might be the case with any individual within our Service, but I want to differ a bit regarding a few of Dale's notes. A person to master the piano, blacksmithing, of any of the professions, does not get as far away from it as possible, forget all about it, etc., and feel that there are very few places in the Park Service that one is tied down to his work to the extent that he is mentally incompetent if not allowed a day a week off, but that we do not have about eight days in each week to get the things done that are needed in order that we might really give efficient service. Considering the things we had at our command a few years ago, and the things that aid us now, I can not see for the life of me, that the service was much less five or ten years ago, than it is right now, and we never even thought of a day off, nor did we spend much time bewailing the fact that our efficiency would be materially decreased since we had swallowed our lunch in about ten minutes in order to get to a party of visitors that might be waiting. Think, Boss, how much more efficient we might have been, (if the party had waited at all) had we placed a nice printed label on the register stating that we were on the verge of fatigue, and that we were in the process at that very moment of a complete rejuvenation and that in exactly 22 minutes and 52 seconds we would be in tip top shape and at their very command. Well, well, enough

of that, Boss, I hadn't realized that I had worked myself up to such a state. The fact of the matter is, I think, that Dale is baiting some of these easy boys, because I have personally talked shop to Dale until all hours of the night, and I didn't notice any evidence of a complete break-down, and I know too, from your reports and letters, that Dale is hitting the ball many weeks without any time off, and yet he comes out in the report with something like that, and has all our rangers thinking they are terribly abused. (This is not intended for my ranger by any means). I make every attempt to warn him of the pitfalls of the printed page, and all the green pastures they seemingly contain.

The month has been one of vigorous action from the CCC angle. The boys are rushing things to completion and yet trying to do everything that we want done. We have added a sewer line and three cesspools to our program. This is to care for all our spare time. I think we can get it all done, and I know we could, Boss, were it not for the fact that we can only work five days a week. For goodness sake don't let Dale get a hold of the fact that the E.C.W only work five days a week or he will want to throw all our rangers under the E.C.W. setup.

Any way it is a great life, we get a big kick out of playing the game, and so, Boss, without even a day off, we tackle another month.

****

WUPATKI

By J. W. Brewer, In Charge

500 Use of Monument Facilities by Public

56 guests registered at Wupatki Pueblo; at the Citadel Group, 21; seven names are duplicated, leaving a total of 70 registered visitors to this monument in February, 1936; 1935, 50; 1934, 50.

Largest single day was January 26 on which 19 visitors registered. With one exception, and that also on January 26, all parties at Wupatki Pueblo were contacted with field lectures. One party of two was contacted at both the Citadel (by me) and the Pueblo (by Sallie). "SWM Stencil No. 16 enclosed.)

States were represented as follows: Arizona, 12; California, 6; New York, Ohio, and Colorado, 2; Virginia, West Virginia, New Mexico, Iowa, Minnesota, Washington, Texas, and Pennsylvania, 1.

530 Newsworthy Vistiors

Dr. Colton and Miss Katherine Bartlett were here on the first collecting measurements from lower rain guages.

Mr. J. E. Shirley, Manager of Transportation at the Grand Canyon, and party came the 29th; Mr. Shirley visited these ruins fifteen years ago, coming in by horseback; he thought the appearance of Wupatki much

improved since its partial excavation.

020 Weather

January 25 to February 9 temperatures not recorded. February 10 to 25, high 61 degrees on the 20th; low 20 degrees on the 4th. Precipitation .014 inches. This is somewhat short of our February, 1935, precipitation which was 1.68 inches.

There were six sunny days, four partly cloudy, and 14 cloudy days.

200 Maintenance, Improvements, New Construction

210 MAINTENANCE

Roofs of Rooms 1 and 4 were inspected and minor repairs made.

Roof of Room 63 was covered with a final three inch layer of Moencopi. The material, shale and fine sand, was hauled from the vicinity of the tank.

230 NEW CONSTRUCTION

The north half of the west wall of Room 72 was reconstructed to an average height of four feet, six inches, on the inside of the room. This was done as a drainage control measure.

220 IMPROVEMENTS

After removing the gooseneck and lowering the pipe line at the tank I installed three lengths of ½" pipe and a shut off valve. The spring output jumped from 720 gallons per day, as reported in January, to 1122.07 gallons per day. Since none of the other neighborhood springs have had this sudden increase I attribute it to the change in the pipe line, although no leak was found in the old pipe.

The make-shift stone steps near Room 49 were torn out and will be replaced with new ones.

400 Flora, Fauna, Natural History

430 ARCHEOLOGY, PREHISTORY, HISTORY

While handling Moencopi Sandstone slabs reconstructing a wall of Room 72, I found one containing a partial foot print. Two of the toe tracks most clearly defined resemble in size and shape the Cheirotherium track cast described in the September Monthly Report, 1935,(page 231). While the track does not seem to be complete, I believe, when it is properly displayed in connection with the more perfect cast it will explain how a natural cast is formed.

460 BIRDS

Bird notes taken during February are as follows: (If specific dates not given the bird has been seen commonly during the past month). Golden Eagle (Clyde Peshlacai says the young have been in the nest since last full moon -- February 7th); Red Shafted Flicker, 14th, 16th, 19th, 21st; Horned Lark (Ocotcoris alpestris sp?); Rock Wren; Sage Thrasher; Western Robin (hundreds); Mountain Bluebird (hundreds); Townsend Solitaire (dozens); White Rumped Shrike, 16th; House Finch, 16th. Two Red Shafted Flickers have been several times frightened out of a hole in the east wall of Room 41.

470 ANIMALS

Three head of Antelope were observed between the Citadel and Highway 89 on the 17th by Winnie Caywood and the HA-CWP.

A few scattered Antelope Ground Squirrels have been seen.

The trapper at Arrowhead Tank reports having shipped a total of over a hundred skins; four of the pelts were badger and the balance coyote and bobcat.

900 MISCELLANEOUS

MUSEUM OF NORTHERN ARIZONA ANNUAL MEETING

At this meeting on February 4 there was passed an amendment to the constitution of the Northern Arizona Society for Science and Art providing that one member of the Board of Trustees be selected from the U. S. Indian Service or National Park Service.

Following the business meeting Dr. Colton gave an illustrated talk on Hawaiian Volcanic Eruptions, including the recent eruption of Mauna Loa, part of which activity Dr. and Mrs. Colton witnessed. The lecture was of especial interest to us because of the similarity of the Hawaiian and Flagstaff volcanic areas; in some of the slides the general aspect of the country might have been mistaken for scenes northeast of Flagstaff. Interesting, too, were pictures of the rough "cindery" type of lava known as "aa" and smooth billowy surfaced type of lava known as "pahoehoe;" the "aa" type is common in the San Francisco Mountain region, but Dr. Colton said that the only example of "pahoehoe" he has seen is at Sunset Crater.

Most surprising view, to me, was one showing people walking on the crust of the lava, under which was flowing molten lava.

NAVAJO ARTS AND CRAFTS EXHIBIT

Because the majority of our local Indians were gathered at the

hogan of Nescai Yazzie for a sing on the night of February 7, Sallie and I attended, thinking it a good opportunity to announce the exhibit.

February 7 was the night of the last full moon so the date was set for the fourth following full moon, June 5, (the exhibit to be on Saturday and Sunday the sixth and seventh).

After explaining the idea to Clyde we waited a long while as he translated and informed the gathering. Several times he repeated "non e shosha yazzie" and after they had discussed it at length I asked Clyde the meaning of the Navajo term -- to learn they were calling our exhibit "Little Gallup Ceremonial."

The show was met with great enthusiasm and some of the oldsters suggested a revival of early day crafts. Peshlacai Etsedie has promised to make a "Navajo saddle" and to encourage the women to employ vegetal dyes in their exhibit weaving.

After seening the response given, I mentally shifted the exhibit from the amphitheatre to the open space opposite the cook shack.

Clyde, Emmett, and Hal want to build an exhibit hogan and brush shelter.

Encouraging cooperation has been received from Dr. and Mrs. Colton.

Sallie has been unanimously elected Field Representative and will contact the hogans.

CAYWOOD'S VISIT

On February 17 Louis and Winnie Caywood brought Don Erskine, Walnut Canyon's new temporary Custodian,to Wupatki. The visit was primarily for a discussion of place names, of which 50 odd were added to the list; secondarily, to acquaint Don with Wupatki and the Brewers with the Don.

WINDOMETER

This instrument, described in the January report, has been sent to the T.W.A. airport at Winslow for correlation with their accurate instruments.

****

SUNSET CRATER

By J. W. Brewer, In Charge

74 guests are registered at Sunset Crater between January 26 and February 12; none is registered after February 12. Unsettled weather and snow fall probablly account for the sudden and complete drop in

traffic. (1934 and 1935 not recorded)

States were represented as follows: Arizona 13; California 12; Illinois and Oklahoma 2; Iowa, Alabama, Connecticut, West Virginia, Texas, Kansas, Michigan, and Indiana 1; Washington D. C. 1; Nome, Alaska 1; Toronto, Canada 1.

Another large yellow pine has blown across the Sunset Crater road, this time between the Crater and Highway 89. The road within the Monument boundaries remains clear.

****

PIPE SPRING

By Leonard Heaton, Acting Custodian

Again I have to stop and make an account of my doings and the happenings here at Pipe Spring. It seems like this monthly report gets around so often there has not been anything worth reporting until I get out my daily record and see just what I have recorded and I find that four weeks have gone by bringing many things to report.

The weather seems to be first as we have been having so much rain, wind, and cloudy weather that we are beginning to wonder when we will have some dry ground again. Starting February 2 with a light snow and rain, we have had storms every few days, getting harder each time, until yesterday there was a good spring rain making the water run down the roads and washes.

The storm has stopped the CCC boys from work five days this month and slowed up their work because of mud. But, due to the CCC boys, the road to Fredonia is practically all graveled, with the exception of the Cottonwood Wash and three or four small spots.

The road is in very good condition for so many storms. Four inches of rainfall reported at Kanab, Utah, a lot for this country. When the work, as planned by the camp is complete, we will have a good road to Highway 89. Coconino County road officials are planning to make a good road from Fredonia to the Indian Reservation, a road about one mile in length. So, if good roads have anything to do with travel, we ought to have an increase in visitors this summer.

The travel this month has been low due to the storms. Visitors were from Utah, Arizona, and Ohio, 11; local travel, 126; total for the month, 137.

I gave two lectures to the CCC boys this month: attendance 15 and 17. The boys are getting a better idea of what the national parks are trying to do for them, as there is hardly a day goes by but what someone has some question regarding the Service.

The E. C. W. work has shown a marked improvement in the monument this month as the following projects are nearing completion:

E.C.W. 718 Walks. West walk complete. Walk in front of east cabin, complete. Excavation for the walk to fort, complete, but the laying of the rock I had stopped on account of the finding of what has proven to be an old dugout -- report later in this report.

E.C.W. 131 Boundary Fence. New posts cut, peeled and on the ground.

E.C.W. 710 Parking Area. The dirt moved from the diversion ditch above the road was used on this project which is now 75% filled and graded.

E.C.W. Superintendent Draper has planned to complete these four projects before this bunch of boys leave here about the 23rd of March, and I think they can if the weather does not hold them up any more.

As I reported in a letter to Al Kuehl, February 16 the boys found some stubs of juniper posts while they were excavating for the walk from the east cabin to the fort. These posts, I am satisfied, were the back of the dugout made by Whitmore and McTyre, 1863.

The dugout being in line of the walk, I had the boys stop work on it till something was decided about whether we would replace the dugout now or not.

Some time last fall I wrote you that I was trying to get a place at Moccasin to which I could move my family. I have finally got that place fixed up and we hope to be able to move into it next Wednesday.

I am going to fix the west upstairs room of the lowest house as an office and living quarters, so that the rest of the Fort will be open to the visitors, which they will enjoy.

In speaking of moving makes me thing of the time I moved here ten years ago this month. Incidentally, we had a lot of storm in 1926. I came here with a horse, two dogs, table, no chairs, a few dishes, and bedding, - and what changes have taken place since then!

Once a place of activity for cattlemen and the watering of hundreds of cattle, now none are allowed to come here to water.

Once a stopping place on the main highway between Zion and Grand Canyon National Parks with a yearly travel of 26,000, now only a few hundred.

Once means of irrigation of 15 or 20 acres, now only the meadow and shade trees to beautify the monument.

Once buildings in a ruined state, now practically restored to the condition when built.

Once rooms barren of all furniture of pioneer life, now a few pieces of prehistoric Indian and pioneer relics are place to break the barrenness of them.

Once a poor place for campers, now the beginning of an ideal camp ground.

Once a poor road which took hours to get over; now it takes only minutes.

Once the wind blew and the stoves and fireplaces smoked with every breeze, and IT IS THE SAME TODAY AND IT WILL ALWAYS BE SO IN THE FORT.

All in all, I have enjoyed my life here at the monument very much and hope that I will be able to continue my services for some time to come.

I am mailing you the last two copies of the Pipe Post published by the CCC Camp here; they have put out some very fine publications.

****

WALNUT CANYON

By Louis R. Caywood Jr. Naturalist

Following is the report for Walnut Canyon National Monument from January 25 to February 19, 1936:

Weather conditions were very bad during all of February causing muddy roads and consequently resulting in comparatively little visitor travel. From January 25 through February 1, the weather was good and over 100 visitors came to view the Canyon. Visitors numbered 167 during my stay. Of this total 132 personal contacts were made either at the Lookout Point or the Ranger Cabin.

February 2 a snow storm raged all day with the result that roads were almost impassable. The snow remained on the ground only a short time, but the roads continued to be muddy for quite a time. A number of fallen pine trees, blown down by the terrific wind, were observed both on and off the monument; none, however, fell across the roads. A tree, which had blown across a main road near Flagstaff, caused quite a serious accident to residents of Flagstaff. Starting Tuesday night, February 11, to the present a snowfall of from one to four inches fell every night. This ceased to be a joke after the third night as the walks had to be cleaned off each morning.

During the period of my stay bird banding was successful. 24 new

bands were used in banding the following:

1	.....	Pigmy Nuthatch
2	.....	Shufeldt Juncos
21	.....	Redback Juncos

On Friday morning, February 14, Donald Erskine arrived to relieve me at this monument and that evening Dale King of the headquarters staff paid us a visit en route to Bandelier National Monument. We were very glad to see these boys, and are sure Donald Erskine will thoroughly enjoy his stay here as we have.

On Monday, February 17, I took Don to Wupatki National Monument to meet the Brewers and visit the monument. He was very much impressed and said he was anxious that his wife see the Pueblo there.

We have not seen any deer in the vicinity this month and are wondering if they have a special stomping ground during snow storms. Several Abert squirrels have been noted on the monument, and on February 18 a Goshawk was seen flying through the pine trees.

Now on February 19 I am turning the monument over to Donald Erskine who I am sure will take splendid care of the place. He will give the total visitor travel at the end of the month and add his remarks.

***

By Donald Erskine, Ranger

As Louie stated in his part of the report, travel has been very poor due to the terrible condition of the roads. Since he left last Wednesday I have had only 20 visitors, and have contacted 17 of them, making the total for the month up to and including the 25th, 187 visitors with 149 contacts.

Most of the time since I've been here there has been very stormy weather with snow every day except three days, and the roads have been getting steadily worse. The only time they are passable without chains is in the early morning when they are frozen. Sunday I had to pull a new Buick from Wisconsin out of the mud, and today I furnished hot water, soap, etc., to a man from Washington who had been forced to put on his chains while stuck in the mud. Incidentally he also had to change his shirt. It has been over a week since an Arizona car has been on the monument. I gues the home folks know better than to try the mud.

I have continued bird banding where Louie left off, and most of the Juncos should be banded by now. Adding my efforts to Louie's gives the following:

1	.....	Pigmy Nuthatch

5 ..... Shufelt Juncos
25 ..... Redback Juncos

Over the past week-end I had a most welcome visit from my wife. She stayed with me from Friday until Monday, and I now feel very much alone in the world since she left. After pulling the Buick out of the mud Sunday it took the combined efforts of my wife and myself to convince the (in my wife's words) lovely old lady, that we could not accept the $5.00 she was trying to force on us. (Yes, it was really $5.00.)

Last Saturday the H.R.W.P. and myself saw about ten deer just off the monument on the east road. Several had beautiful sets of antlers. Shouldn't they be shedding them pretty soon? I wouldn't mind finding a nice set. Also this afternoon I came within 100 yards of two hen turkeys in the picnic grounds in front of the Ranger Station.

After being here less than two weeks I still feel free to think that Walnut Canyon is very much all right.

****

CASA GRANDE

By W. J. Winter, Custodian

This report is rather hastily dashed off in small bits, as we are meeting visitors in great numbers and, with Charlie detailed off to Tonto, Al and I are kept on the jump.

Travel this month was 2,540. This included two groups of CCC boys, 21 on February 9 from SP-6, near Tucson, and 50 on February 23 from the camp at Windelman. A few newsworthy visitors were noticed. February 2 we met George Parkery Winship of Dover, Massachusetts. Mr. Winship is the author of "The Coronado Expedition, 1540-1542," in the 14th Annual Report of the Bureau of American Ethnology. Since this work deals with our part of the country it is particularly interesting to us. February 1616 the ruins were visited by Mr. Arthur M. Hyde, former Secretary of Agriculture. February 18 we were interested to meet Colonel G. D. Pope of Detroit. We had often seen the name of "Dr. Pope, U. S. Army," on the south wall of the north room of the Casa Grande. Colonel Pope informed me that Dr. Pope was his father, and had been in Arizona as an Army surgeon in the 70's, at which time he had left his name on the wall. Colonel Pope also said that the name of his Grandfather, Charles D. Poston (now buried at Poston's Butte) was supposed to be somewhere on the wall. We looked for it for a few minutes but did not find it. You may possibly have seen it. February 23 we greeted former Senator David A. Reed of Pennsylvania.

NPS visitors were few this month. February 18 we were glad to meet Dr. Donald DeLeon of the Branch of Forestry in Berkeley, accompanied by C. R. Willette of Yosemite. Dr. DeLeon was kind enough to inspect

the mesquite infestation reported last month and said that if we sent him a sample he would get us the dope on it. The sample has been sent.

Weather this month hasn't been bad, though a bit wet at times. Minimum temperature was 25 on the 7th, Maximum 79 on the 22nd, which being a holiday encouraged quite a number of visitors to come. Precipitation was 1.63.

I am glad to report that we finally got our sewer pump working, thanks mostly to the services of Al Bicknell, who got our old motor into running order and set up the pump. Now the usual couple of hours daily pumping is done by the motor in about twenty minutes. Of course, this is only a make-shift, as the water is pumped out into an open ditch, which is bad enough now but will be worse when the weather gets hot. So, we are still praying for the funds for a new sewer system.

Speaking of funds, I regret very much to report that about five cubic feet of the top of the east wall of Compound A fell off the other day. When will we get the appropriations to properly preserve these ruins?

Signs of spring have appeared in quantities in the last few weeks. Ground squirrels and lizards are running around. The owls who own the Casa Grande have a nest on top of the east wall of the center room. Phoebe are also noticed nesting in the ruins. Ocatillo leaves are coming out. The Custodian and Ranger show signs of Spring fever -- or do they show that all the year around?

Ranger Charlie Steen was borrowed by the Naturalist Division a couple of weeks ago and accompanied Park Naturalist Rose to Winkelman where he gave a talk to the CCC camp. He returned alive and unharmed so I gather that the talk must have been a success. In fact a number of the boys came down to see the ruins the following Sunday, so apparently Bob and Charlie are good salesmen.

One of the better wisecracks this month seems to have come from the H.C.W.P. We made a trip to Phoenix February 14, which as you know is the State holiday called Admission Day, being the date upon which Arizona was admitted to the Union. The banks are closed on that day and this was noticed by the H.C.W.P., who queried "Why do they put up a sign saying 'Admission Day' when they won't let you in?" Not an unreasonable question, when you stop to think about it!

****

TONTO

By Woodrow Spires, In Charge

February will probably go down in history as the most phenomenal month ever witnessed here. Just think, eight days of rain and to cap the climax, the engineers arrived to lay out the proposed new road.

During the last month we have encountered weather which has been unheard of in this country since 1919. Precipitation for the last month totaled five inches. It was recorded on eight of the 14 cloudy days and four part cloudy days. The temperature has been very mild, without a freeze. 68 degrees was the maximum and 33 degrees the minimum.

The cattlemen of this region are looking forward to one of the best years in the history of Arizona's cattle industry. One cowman told me he would get a 95% calf crop with sufficient feed to carry through the summer.

The visitor count for the month shows a decrease of 33 persons or 4% which can easily be accounted for by the weather report. The following figures are derived from SWM Stencil No. 16:

Total visitors at the monument	724
Total guiding time	7020 minutes
Total visitors taking field or ruin trips	82
Total time spent in field and ruin trips	5420 minutes
Average time of field or ruin trips	66 "
Average group for field or ruin trip	6.32 Persons
Total visitors for museum trips	452
Total number of museum trips	81
Total time for museum trips	1600 Minutes
Average time of museum trips	19.76 "
Average size of museum groups	5.58 Persons

Special trips to the upper ruins were so few that I counted them as regular field and ruin trips.

Checking last year's travel count for the same period (January 25 to February 25) I find 599 persons visited the monument against 724 for the same period this year. This is an increase of 125 persons or 20%.

This month's special visitors report looks as though I was copying the Southwestern Monuments personnel. Leading off with Dale S. King, Don Erskine and Charlie Steen on February 10, with King and Erskine repeating on February 13, King spending the night. February 18 Watson Smith of Cincinnati, Ohio, who spent last summer with Ansel F. Hall's Rainbow Expedition and who at present is studying "Ho-Ho-Kam" at Gila Pueblo. February 19 the engineering crew, consisting of Mr. Andrew Clark and the new Mrs. Clark, Venla, and Mr. and Mrs. Carl Schmidt (Boss you sure have to give these engineers credit for being able to corral good cooks) arrived for about two weeks of road location work. February 20 Mr. Jack Diehl, Associate Engineer for the Southwestern Monuments, and Harry Langley, Landscape Architect, arrived. (This is what Amos and Andy would call check and double check.) Mr. Diehl to check on Andy and Carl and Mr. Langley to check on Mr. Diehl. February 22 Frank Lloyd Wright, world famous architect, and a group

of 21 protege camped on the north slope of the monument and spent a couple of hours viewing the style of architecture of the upper ruins. February 23 Mr. Diehl and Charlie Steen returned, Mr. Diehl for a stay of a couple of days and Charlie for a week. During Charlie's stay he will attempt a little ruins stabilization and catalog the Museum collection.

February 13. The first systematic inspection under the new rules was carried on by Dale S. King.

February 22. While hauling wood I accosted a party of pot hunters on the lake shore. These men were obviously semi-professional, as they knew the difference between our local types of pottery. After telling them I represented the Federal Government, they began to tell me how they were out of work and had wives and families they had to support. So, upon a very conscientious promise that they would never again be guilty of the same offence, I let them go. The water users and Forest Service have thrashed out the matter of controlling the lake bed and the Forest Service won out so now we can curb all pot hunting in this vicinity.

The rains in the last month have certainly played havoc with the trail and road.

Boss, I guess I'd better close this before my secretary (Beth) gets writers' cramp, and you have to try deciphering some of my hieroglyphics.

****

BANDELIER

By Earl Jackson, Custodian

Visitors:

Visitors numbered 252, arriving in 79 cars, from 25 states, Washington, D. C., Dutch East Indies, and Montreal, Canada. Only 11 states and Washington, D. C., represented by cars.

The six highest states by visitors were: New Mexico, 189; Iowa, 12; California, 11; Texas, 8; Maryland, 7; Colorado, 6.

Visitor attendance shows a decrease of 42 under February of 1935. In view of very bad weather conditions, I am surprised attendance was not much lower.

Weather and Roads:

Days partly cloudy: 7.		Minimum temp.....	8. Jan. 29.
Days cloudy.....16.		Mean Maximum.....	41.4
Days clear ..... 8.		Mean Minimum.....	22.6
Maximum temp.....54.	February 23.	Precipitation.....	.85

Snowfall..... 4.95 inches. Jan. 29, Feb. 13,16,18,19.
Rainfall..... February 11, 14.
Icestorm..... February 3.

Weather has been severe. While we have escaped the dust storms of a year ago, we have had much more consistently stormy weather, about a quarter inch more precipitation, and only eight clear days. Instead of having two or three good storms, there have been several small ones scattered through the period, and the high percentage of cloudy days has prevented the soil drying on the surface.

Roads have been in the worst condition I have seen them yet. For several periods of a few hours at a stretch they were impassable without chains, and sometimes even then with difficulty. They have been so wet that a road grader could do very little good.

Visitor Trip Chart:

Twenty five parties of visitors were taken through the ruins, numbering 125 people. Average time per trip was 59.28 minutes. Eight parties, numbering 21 people, were talked to without ruins trips, averaging 16.87 minutes per party. All visitors to the monument were contacted and registered. A great many of those who did not take guided trips did not go through the ruins, but took in the view from a distance and left.

Special Visitors:

January 25 - A Mrs. Harley, of Baltimore, Maryland, made her second return visit to the monument, accompanied by Mrs. J. W. Hyler and sons, of Denver, Colorado, Mrs. Harley is one of our best boosters.

January 26 - George M. Hoffman and Worth D. Ross, of the U. S. Bureau of Public Roads, were interested visitors.

February 1 - Superintendent A. L. Brown, of the Colorado School for the Deaf and Blind, was in with a party of 14, 12 of whom were deaf. The party included members of the basketball team of the school, who had come to Santa Fe to play the team of New Mexico's Deaf and Dumb School. Mr. Brown relayed practically my entire lecture to them by talking with his fingers. I advise any man who read this to carefully refrain from mentioning to their wives possibilities for rapid finger speech to supplement tongue action.

February 12 - Clint Anderson, W.P.A. Field Representative for 11 Western states, brought in a party of distinguished Rotarians. Mr. E. J. Johnson, president, International Rotarians, and wife, were in the party. Accompanying them were Mr. W. J. Jenks, vice-president of the Norfolk Western Railway, of Roanoke, Va., and wife. Charles H.

Lambke, Mayor of Albuquerque, was with the party.

Charles A. Richey arrived for landscape and building inspection, to depart on February 14.

February 13 - Jack Diehl was in and out after a brief inspection.

Norman Smith, junior geologist, E.C.W., arrived, and has been had at in getting material for a geologic report on Bandelier National Monument.

February 17 - Dale King, Junior Park Naturalist from Headquarters, arrived for a four day stay.

Nature Notes:

The beaver which was reported to bé coming up the canyon appears to have decided to settle down for a while. For some time now no more progress has been noted upstream. A. B. Groce, Landscape Foreman here, says there must be two beavers. He has seen one, in its hole under a rock ledge.

Patrol up Frijoles Canyon to the Upper Crossing, six miles from headquarters, reveals over a foot of snow on the shady side of the canyon. Turkey tracks were not in evidence at the Crossing, but a great many were seen from about a mile below that point to as far as the custodian's residence, in places where the snow was melting and showing only in spots.

Betty's bird banding report will be found in the Supplement.

General:

Visitors to Bandelier must be really interested. One day it snowed continuously all afternoon. A party from Albuquerque came in, spent two hours having a picnic lunch in the open snow storm, then took the guided trip through the ruins and extended their hike until nearly dark. It takes real interest to do that in snowy and freezing weather.

We are going to have a real museum yet. The walls of the building are half finished, and going ahead in good shape. Dale King's visit was much appreciated. While he was here we worked and re-worked museum charts and maps until they haunted me in my dreams. We have had excellent cooperation in preparation of charts from the staff of the Laboratory of Anthropology in Santa Fe. Dr. Mera, staff archeologist, has been especially generous in time and labor devoted to our pottery and culture charts. Dr. Chapman, acting director of the Laboratory, gave valuable suggestions on the color scheme for the museum. Sid Stallings, tree ring specialist, has promised us material for an exhibit layout in dendrochronology. The State Museum has promised us considerable artifact

material when we get ready to display it. This material was uncovered by the School of American Research, under the direction of Dr. E. L. Hewett, director. He has promised us all possible aid in museum development, and Paul Reiter, curator of the State Museum, has pledged assistance.

If all the museum plans work out as we fondly imagine they will, I will feel a bit sorry for the rest of you fellows, for your museums will have to take a second instead of a first place.

****

BANDELIER FORESTRY

By James Fulton

Current Project:

This month I have had the job of hewing lintels and dressing vigas for the museum and residence which are now in process of construction. The lintels were made by first scoring the log with an axe and removing the bulk wood. Then an adze is used for putting the finishing touches on the lintel.

Suggested Projects:

For some time I have felt the need for two lookout tree ladders on this monument. One should be on Corral Hill and the other should be near the Upper Crossing. These locations are indicated on an accompanying map. Such ladders would constitute fast, safe methods for fire crews to locate fires.

Since I have been here, I have used Corral Hill several times as a lookout hill for locating reported fires. This hill affords a good view of most of the South Mesa and of some of the country south of Alamo Canyon. Also, it is in a central location making it handy to routes of travel. In addition to being a good secondary lookout hill, I have found it to be satisfactory for making topographical reconnoissance of beetle infestations.

The Upper Crossing lookout tree is close to the trail and would serve the purpose of locating fires in the country along the west boundary between Frijoles Canyon and Alamo Canyon. It is best to approach a fire in this part of the country by driving to the Upper Crossing and then taking the trail across Frijoles Canyon. (This agrees with the idea carried out in the Bandelier Fire Atlas Hour Control Map.) If a crew were to meet with this situation, a lookout tree would be a big help at the point indicated.

In my opinion, no other ladders are needed. On other parts of the Monument, the trails hit high points which afford suitable views of the country.

According to specifications used by Grand Canyon National Park, these ladders are constructed of angle iron in suitable lengths, with a rise of 13", and in width 13". They are fastened to the tree with lag screws allowing 6" between the tree and ladder for foot trend. The ladder is then wired for lightning protection. Dark green paint on the ladder and no unnecessary limbing of the tree causes the completed job to present a natural appearance.

In all, these two ladders would require no more than forty dollars for material and they could be fabricated in the blacksmith shop.

****

BANDELIER E.C.W.

By H. B. Chase, Project Superintendent

The 10,000 gallon concrete water storage tank was formed and poured this month, the laying of the intake and return supply line is now in progress. About the 10th of March the concrete will have its final set at which time inside forms will be removed and the tank put into operation.

Additional underground power line cable from Headquarters building to the camp ground comfort station has been installed.

Tree and scrub planting has been in progress all month together with some road obliteration work along the road leading to the former utility area.

The museum building is now constructed to lintel height and portal connection has been placed between the headquarters office building and museum. A timber crew has worked all month on shaping vigas, lintels and beams for this building.

Quarters No. 1 has gotten well under way this month with all wall construction an average of two feet above floor grade.

The carving crew has continued to work all month on signs. The signs ordered for Wupatki are now complete and this date being crated for shipment. We hope they will prove satisfactory.

And still our quarry crew is a continuous operation, this project probably being the nucleus of a large percent of our work.

Some maintenance on the entrance road and canyon floor road has been done during the month with considerable more coming as the frost and snow leaves the ground.

Our progress this month has been very good considering two principle conditions, weather and company strength. A number of days work have been lost due to bad weather but mainly progress is hampered by shortage of men. At present our company strength is 149 which means

approximately 115 men to the work projects and when these are divided it maans each foreman is asking for another crew.

****

CAPULIN MOUNTAIN

By Homer J. Farr, Custodian

Reporting happenings from Capulin Mountain National Monument for February, 1936:

Only about 500 visitors to the old Volcano this month, however, mostly out of state visitors. The road is getting in such poor conditions that many visitors have refused to drive up and have walked the two miles to the top via the road.

Weather conditions have been ideal for the stockman, and the traveler. Several light snows and some moisture all during the winter, but roads have been open and good all over the country near here all winter. In general, have had a mild winter. The thermometer. The thermometer reached 11 below in the forepart of the month, and this week it reached a high of 45 and a low of 15 regularly, daily.

****

NATURAL BRIDGES

By Zeke Johnson, Custodian

I am glad to report that all is well with me as another month comes to a close. February has been a very wet month in this country. I have stayed at home more than usual and haven't contacted as many people as I would like to have done. It looks like spring is just around the corner and I am sure itching to get back on the job.

It looks like I will have a busy season this year for I am getting many letters asking about Natural Bridges and the scenic San Juan. And won't I be glad to get back! I don't like the city life. I am just like the long-horned cow longing for dry summer range.

I was horrified to learn of the tragic death of Roger W. Toll and his companion. Superintendent Toll was the last one to write in my book at the monument last fall, and we had a short trip planned together for this season. I surely mourn his loss. It's just too bad. I have sent a card of sympathy to his wife at Denver.

****

NAVAJO

By John Wetherill, Custodian

I am sending you a list of guests who were unable to visit the monument on account of the bad roads. The road is not bad on account of the weather, as there is no mud or snow to bother. They are washed out from last summer rains. We have never had a road that anyone would want to put a good car over, and a bad car cannot get through when the roads are at their best.

Some 15 years ago a missionary wanted to get members for his congregation. He started in by giving them meat, bread, beans and coffee. It was only a short time until he had his church filled. He found it was costing him more than he could afford and he cut off the meat; a few members dropped out. The expense was still more than he could stand and he cut out the bread. He still couldn't stand the gaff, and he cut out the beans. There was only one old cripple left. The Missionary asked the old man what was the matter. The old man told him, "No beans, no Jesus." I think that is the matter with my report "No beans, no report." (Or a darn poor excuse of a report.)

****

HEADQUARTERS STUFF

DIVISION OF EDUCATION

By Robert H. Rose, Park Naturalist

The staff of the Division of Education during the month has consisted of junior park naturalists King and Caywood, and the writer. Caywood's relief service in the field which began in the latter part of December, 1935, continued through January and until February 20, when he was relieved at Walnut Canyon National Monument by Ranger Don Erskine. Caywood has been on museum planning work in the office since his return. Mr. King made one field trip during the month between the 13th and 22nd inclusive. Further reference will be made to the activities of Messrs. King and Caywood. Except for a short field trip of two days the writer has been in the office for the entire month.

Educational Contacts Records:

In the January Monthly Report it was announced that a revision of the January Statistical Summary on Educational Contacts would be necessary. This condition arose out of the fact that a great deal of study of all of the Form 16 reports was required in order to classify the various contacts at all of the monuments. Accordingly, there will be found at the close of this report a revised "Statistical Summary for January 1936." The total of contacts has not been changed; only subtotals under the different headings show revision. It is believed that further revisions will be unnecessary and that the system is now workable.

Late in December, 1935, the field men were asked to submit figures on educational contacts for October, November, and December according to the best estimates and records available. These data have been organized and I am pleased to include at the close of this report the contacts records for the last quarter of 1935. This makes a total of five months of these records included in this February 1936 report bringing the tabulations up to date for the travel year.

I wish to emphasize Superintendent Pinkley's observation of last month to the effect that these figures are yielding interesting results. He remarked concerning the visitor records for Walnut Canyon. It was quite a surprise, now that we have had Park Service representative there in mid-winter, to find a pretty constant flow of visitors into that monument. The reason this was practically unknown heretofore is because of the fact we have not been able to staff that monument during the winter months.

Another surprise that turns up is the actual record of the man-sized job at Tonto National Monument. We have known that Tonto had fair travel during the winter. However, observation of the records of visitors, group by group, is impressive.

Some of the field men have doubtless been wondering just why we attach importance to the "Minutes Devoted to Group" column on the daily report Form 16. The entry is provided for both field trips and museum lectures. This is done for the purpose of evaluating the whole educational contacts problem at each monument. Remember, in the January report, page 40-5, a distinction was clearly drawn between TRAVEL REPORTS and EDUCATIONAL CONTACTS. I further emphasized that in certain monuments a ranger may be so busy handling checking duty and in doing general informational and protectional service as to be unable to perform educational contacts service. Thus, let us at once recognize that these educational contacts records are solely for the purpose of evaluating the educational program at each monument. Your activities in checking traffic, policing campgrounds and general premises, giving general informational services, supervising construction, and in other work connected with the administration of your monument should be carefully reported under other headings. In some monuments these duties are so heavy as to require practically all of the time of the man in charge while in other monuments the whole time of all personnel is taken in educational contacts. It is squarely up to field men in preparing their monthly reports to itemize their other activities quantitatively and under their proper headings since the educational contacts reports were not designed to cover the whole field of activity. I think rereading Page 40-5 of the January Monthly Report will make these points clear.

Clerical Work and Personnel:

A great deal of general correspondence has been handled during the month by naturalist staff members. Museum planning has occasioned considerable correspondence with the Museum Division, Field Division of Education and the various monuments concerned. Added to this there has been an increased number of requests for general information reaching this office from prospective visitors. An informational leaflet on White Sands National Monument was mimeographed. Only 3,000 copies were made since improvement in content and arrangement will probably be desired as we see how they are received. Assistance in editing and publishing the

Monthly Report, keeping books catalogued to date and maintaining the bird banding records are among other routine office work accomplished.

Museum Plans:

1. Museum planning for Bandelier, Montezuma Castle, Tumacacori, Aztec and Casa Grande has received the attention of the staff during the month. Junior Naturalist King has completed detailed specifications for some of the Bandelier Museum case layouts and these have been forwarded to the Chief of the Museum Division for clearance. After this clearance is secured they will be ready for the preparators at the Field Division of Education.

2. Within the past five years general reports covering the proposed museum at Montezuma Castle have been prepared by the writer, Custodian Earl Jackson, and others. No detailed case layouts had as yet been designed. Accordingly, Jr. Naturalist Caywood has been working on the exhibits layouts. A part of the total appropriation estimated for exhibits and museum equipment is now available at Field Division of Education and upon completion of this plan work can begin.

3. An earlier report on the Tumacacori Museum prepared by Dr C.P. Russell has been re-studied. A number of the exhibits proposed by Dr. Russell were listed as early projects under the program for Tumacacori now set up at Field Division of Education. The writer has given personal attention to the Tumacacori exhibits program.

4. The museum project for Casa Grande has been discussed with Custodian Winter and some general conclusions have been arrived at. Only museum equipment is provided for in the Casa Grande setup. The project for Aztec Ruins National Monument Museum will consist in completing the whole project for Aztec prepared by Louis Schellbach of the Berkeley Office.

Field Trips:

Jr. Naturalist Louis Caywood returned to Headquarters on the evening of February 20 after relief detail through February, to that date, at Walnut Canyon National Monument. Please consult the monthly report for Walnut Canyon prepared by Mr. Caywood, and his brief report contained in this general report, for a more detailed account of his activities.

Jr. Naturalist Dale King left Headquarters February 13 and returned on February 22. During this field trip he inspected the Bandelier Museum now under construction and gath red material at the Laboratory of Anthropology for the preparation of exhibits.

On February 24 the writer made a short field trip to Deming, New

Mexico, returning the evening of the 26th. Word was received about six P.M. of the accident near Deming, resulting in the death of several persons including Superintendent Roger W. Toll and George Wright, chief of the Wildlife Division. Details were lacking and accordingly the writer left on short notice for Deming to render any possible assistance.

Special Lectures:

A total of 520 outside lecture contacts were made from Headquarters during the month. These include the 100 attendance at the lecture given by Ranger Charlie Steen at Winkelman CCC Camp. These are detailed as follows:

1. The report of a lecture before the Elcy CCC Camp by the writer was reported for January although it more properly belongs to this month since the date was January 31. The talk was centered around Arizona's National Monuments. This camp is located about 20 miles east of Casa Grande National Monument. The attendance was 200.

2. On the evening of February 11 the writer gave an illustrated lecture before the boys of WalkerCanyon CCC Camp located about 10 miles west of the Tumacacori to Nogales Highway. The subject was "Cliff Dwellings and Pueblos of Arizona." Attendance was 200.

3. On the afternoon of February 17 the writer talked to a group of 20 members of the Conservation Club of the Phoenix Union High School. The subject was "Conservation in the National Parks and Monuments." The group seemed to be vitally interested in the type of conservation exemplified in the national parks and monuments. It is complimentary to the school to have a club interesting itself in problems pertaining to conservation.

4. For the evening of February 19 an illustrated lecture was scheduled for the CCC Camp at Winkelman, Arizona, some 80 miles northeast of Casa Grande National Monument. Ranger Charlie R. Steen gave the program with the writer as operator of the slide machine. "Every-day Life Among the Prehistoric Indians" was the subject chosen by Mr. Steen. These boys are quite isolated from larger towns and cities and judging by their reaction and splendid attention, Mr. Steen's talk was a real treat to them. Attendance was 100.

Report of Junior Naturalist King:

Approximately ten days were spent on the January Monthly Report.

From February 6 to 12, my time was occupied with routine naturalist and office matters. Leaving Headquarters February 13, I made inspections at Tonto, Montezuma Castle, Bandelier, and Saguaro National Monuments. Four days were spent at the Laboratory of Anthropology at Santa Fe and at

Bandelier National Monument on museum exhibit matters. During the time, plans for three cases were practically finished, and many details worked out for several others. Acknowledgements of the cooperation received from other agencies have been mentioned in the report of Custodian Jackson.

A museum storage case was delivered to White Sands National Monument and then I returned to Headquarters February 23 to be occupied with further Bandelier museum work and routine duties for the remainder of the month.

Report of Junior Naturalist Caywood:

The greater part of the month was spent at Walnut Canyon National Monument which monument was turned over to Ranger Donald Erskine on February 19. At that time I returned to Headquarters, Coolidge, Arizona. For the full report covering my activities at Walnut Canyon during that period see the monthly report.

Since funds are now available for the preparation of several museum exhibits for Montezuma Castle National Monument, I was given the project of making up a proposed museum exhibits plan with the hope that final plans for museum exhibits will soon be decided on by the Naturalist Division, Southwestern Monuments, and actual work will be started on the exhibits. Four of the remaining five days of the month were spent working on this plan and one day was devoted to helping the personnel of Casa Grande National Monument with visitor duty.

****

DISCUSSION OF CONTACTS

By Park Naturalist R.H.Rose

Following are educational contacts tabulations for October, November, and December, 1935, and January and February, 1936. Tabulations for the last three months of 1935 are based upon the best estimates and records available. Those for the first two months of the new year are compiled upon actual records kept by field men on Form 16. Now that the records are current for the travel year it will not be difficult to keep them current each month.

October 1935:

Following are some observations from the October tabulations:

Field Trip Contacts-----	1,045	groups----	6,760 attendance
Museum Lectures---------	389		2,805
Museum Unattended-------	175		1,481
Lectures Outside--------	1		115
Miscellaneous-----------	313		1,157
	1,923	groups----	12,318 Educational contacts.

November 1935:

Following are observations from the November tabulations:

Field Trip Contacts	1,072 groups	6,354	attendance
Museum Lectures	295 groups	1,859	
Museum Unattended	171	1,365	
Lectures Outside	7	485	
Miscellaneous	156	584	
	1,701 groups	10,647	Educational Contacts.

December 1935:

Following are observations from the December tabulations:

Field Trip Contacts	926 groups	4,769	attendance
Museum Lectures	284	1,508	
Museum Unattended	30	1,793	
Lectures Outside	1	20	
Miscellaneous	70	402	
	1,311 groups	8,492	Educational contacts.

January 1936:

Following are observations from the January tabulations:

Field Trip Contacts	964 groups	6,568	attendance
Museum Lectures	461	3,008	
Museum Unattended	128	1,072	
Lectures Outside	20	2,283	
Miscellaneous	12	1,156	
	1,585 groups	14,047	Educational Contacts.

February 1936:

Following are observations from the February tabulations:

Field Trip Contacts	1,141 groups	7,200	attendance
Museum Lectures	474	3,369	
Museum Unattended	81	711	
Lectures Outside	11	1,084	
Miscellaneous	96	460	
	1,803 groups	12,824	Educational Contacts.

STATISTICAL SUMMARY ON EDUCATIONAL CONTACTS FOR OCTOBER 1935

SOUTHWESTERN NATIONAL MONUMENTS

MONUMENT	EMPLOYEES		GUIDED TRIPS					MUSEUM LECTURES					MUSEUM ATT'D		LECTURES OUTSIDE		MISC.		TOTAL EDUC. CONTACTS	TOTAL TRAVEL
	PERM	TEMP	NO	ATT	TIME	AV ATT	AV. TME	NO	ATT	TIME	AV ATT	AV. TIME	NO	ATT	NO	ATT	NO	ATT		
ARCHES	1/165																		(NO REPORT)	
AZTEC	2		125	1155	3750	9.2	30	125	1155	2500	9.2	20							2,310	1,155
BANDELIER	1		75	440	4500	6	60										40	150	590	659
DE CHELLY	1		24	64	2820	2.8	117												64	64
CAPULIN	1/165																		0	1,200
CASA GRANDE	2		285	2281	10545	3	37	94	300	1880	3.5	20	175	1481					4,562	2,281
CHACO CANY.	1		68	205	8160	3	120										40	150	355	615
CHIRICAHUA	0																		(NO REPORT)	
EL MORRO	0		18	160	1134	9	63										1	2	162	160
GILA CLIFF	0																		(NO REPORT)	
GRAN QUIV.	1		48	239	1920	5	40												239	239
HOVENWEEP	0																		(NO REPORT)	
MONTEZUMA	2		105	536	4200	5	40	120	600	2400	5	20							1,136	686
NATL. BR.	0																		(NO REPORT)	
NAVAJO	1/165																2	5	5	(NO REP)
PIPE SPGS	1-Lab		23	90	575	4	25												90	220
RAINBOW	0																		(NO REPORT)	
SAGUARO																			(NO REPORT)	
SUNSET CR.	0																		(NO REPORT)	
TONTO		1	58	231	4640	4	80	50	250	1000	5	20							481	332
TUMACACORI	2		142	711	6390	5	45												711	711
WALNUT CYN.		1	28	138	560	5	20										30	150	288	687
WHITE SDS.	1/5		28	420	2240	15	80										200	700	1,120	3,507
WUPATKI		1	16	90	640	5.6	40								1	115			205	100
YUCCA	0		2	10															10	12
HDQTRS																				
TOTALS	12.2	3	1045	6760	52074			389	2805	7780			175	1481	1	115	313	~~1005~~ 1157	12,318	12,608

* 12 Permanent Custodians and Rangers, full time; no ranger naturalists and 1- temporary ranger.

STATISTICAL SUMMARY ON EDUCATIONAL CONTACTS FOR NOVEMBER 1935

SOUTHWESTERN NATIONAL MONUMENTS

MONUMENT	EMPLOYEES		GUIDED TRIPS					MUSEUM LECTURES					MUSEUM ATT'D.		LECTURES OUTSIDE		MISC.		TOTAL EDUCA. CONTACT	TOTAL TRAVEL
	PERM	TEMP	NO	ATT	TIME	AV ATT	AV. TME	NO	ATT	TIM	AV ATT	AV. TME	NO	ATT.	NO	ATT	NO	ATT.		
ARCHES	1/165																		(NO REPORT)	
AZTEC	2		74	409	2442	5.2	33	74	409	1480	5.7	20							818	400
BANDELIER	1	1	50	328	3000	6.5	60										60	200	528	528
DECHELLY	1		9	23	355														23	30
C.PULIN	1/165																		0	900
CASA GRANDE	2		309	2165	10815	7	35	100	800	2100	8	21	171	1365					4,330	2,165
CHACO CANY	1		54	176	4860	3.3	90												176	528
CHIRICAHUA	0																		0	175
EL MORRO	0		12	45	960	3.8	80										1	4	49	45
GILA CLIFF	0																		(NO REPORT)	
GRAN QUIV.	1		40	200	1400	5	35												200	340
HOVENWEEP	0																		(NO REPORT)	
MONTEZUMA	2		60	300	2400	5	40	75	375	1500	5	20							675	445
N.TL. BRID.	0																		0	125
NAVAJO	1/165																		0	NO REPT.
PIPE SPRING	1-Lab		35	349	1050	10	30												349	619
RAINBOW	0																		(NO REPORT)	
SAGUARO	0																		(NO REPORT)	
SUNSET	0																		(NO REPORT)	
TONTO		1	50	248	3500	5	70	46	275	920	6	20							523	396
TUMACACORI	2		285	1141	15680	4	55												1,141	1,141
WALNUT C.		1	16	85	960	5.5	60										25	80	165	334
WHITE SANDS	1/5		67	800	4020	12	60										70	300	1,100	2,930
WUPATKI		1	11	85	440	3.5	40												85	93
YUCCA	0																		0	10
HDQTERS															7	485			485	
TOTALS	13.2	4	1072	6354	52382			295	1859	6000			171	1365	7	485	156	584	10,647	11,309

*12 permanent custodians and rangers, full time; no ranger naturalists; no temporary rangers.

STATISTICAL SUMMARY ON EDUCATIONAL CONTACTS FOR DECEMBER 1935

SOUTHWESTERN NATIONAL MONUMENTS

MONUMENT	EMPLOYEES		GUIDED TRIPS					MUSEUM LECTURES					MUSEUM ATT'D		LECTURES OUTSIDE		MISC		TOTAL EDUCN. CONTACTS	TOTAL TRAVEL
	PERM	TEMP	NO	ATT	TIME	AV ATT	AV TME	NO	ATT	TIM	AV ATT	AV TME	NO	ATT	NO	ATT	NO	ATT		
ARCHES	1/165																		(NO REPORT)	
AZTEC	2		55	391	1760	6.6	32	55	391	1100	6.6	20							782	391
BANDELIER	1	1	12	65	720	5.5	60										18	65	130	130
DECHELLY	1		7	23	610	3	30										1	4	27	23
CANYON	1/165																		0	500
CASA GRANDE	2		243	1390	7681	5.7	32	60	342	1200	5.7	20	30	1793					3,525	2,135
CHACO	1		25	82	2375	3.3	95										15	75	157	330
CHIRICAHUA	0																		0	120
EL MORRO	0		5	14	375	3	75										1	3	17	NO REPT
GILA CLIFF	0																		(NO REPORT)	
GRAN QUIV.	1		30	150	1200	5	40												150	200
HOVENWEEP	0																		(NO REPORT)	
MONTEZUMA	2		75	375	6000	5	40	119	475	2380	4	20							850	568
NATL BRIDG.	0																		(NO REPORT)	
NAVAJO	0																		(NO REPORT)	
PIPE SPG.	1-Lab		21	64	420	3	20												64	214
RAINBOW	0																		(NO REPORT)	
SAGUARO	0																		(NO REPORT)	
SUNSET CR.	0																		0	55
TONTO		1	56	278	3920	5	70	50	300	1000	6	20							578	362
TUMACACORI	2		328	1311	18696	4	57												1,311	1,311
WALNUT C.N.		1	13	71	780	5.5	60										15	75	146	283
WHITE SDS	1/5		50	500	1500	10	30										20	180	680	1,840
WUPATKI		1	6	55	240	3.5	40												55	63
YUCCA HOUSE	0																		(NO REPORT)	
HDQTRS															1	20			20	
TOTALS	13.2	4	926	4769	46277			284	1508	5680			30	1793	1	20	70	402	8,492	8,525

*12 Permanent Custodians and rangers; no ranger naturalists; No temporary rangers.

STATISTICAL SUMMARY ON EDUCATIONAL CONTACTS FOR JANUARY 1936

SOUTHWESTERN NAT'L. MONUMENTS

MONUMENT	EMPLOYEES		GUIDED TRIPS					MUSEUM LECTURES					MUSEUM ATT'D		LECTURES OUTSIDE		MISC.		TOTAL EDUC. CONTACTS	TOTAL TRAVEL
	PERM	TEMP	NO	ATT.	TIME	AV. ATT	AV TM	NO	ATT.	TIME	AV. ATT.	AV. TME.	NO.	ATT.	NO	ATT.	NO	ATT		
ARCHES	1/165																		(NO REPORT)	
AZTEC	2		45	172	1428	3.8	32	48	178	847	3.7	18	1	3	1	180			533	225
PANDELIER	1		17	51	1015	3.0	60										2	4[illegible]	55	254
DE CHELLY	1		2	5	120	2.5	60									350			355	10
CAPULIN	1/165		3	33	260	11.	87												33	350
CASA GRANDE	2	1	337	2938	12336	8.7	36	223	1869	43948.4		19.	127	1065					5376	3370
CHACO	1		3	10	370	3.3	125	1	2	20	2.0	20							12	260
CHIRICAHUA																			0	350
EL MORRO	1/5		1	3		3.0													3	4
GILA CLIFF	0	0																	0	0
GRAN QUIVIRA	1		12	88	425	7.3	36	2	42	35	21	18							130	287
HOVENWEEP	0																		0	0
MONTEZUMA	2		73	376	2940	5.2	41	103	510	2200	5.1	22					4	51	927	696
NAT. BRIDGES	0	0													12	1068			1,068	No REP'T
NAVAJO	1/165																		(NO REPORT)	
PIPE SPRING	1-Lab		16	79	465	5.0	29												79	307
RAINBOW	0	0																	0	0
SAGUARO		1															1	200	200	800
SUNSET	0																2	26	26	80
TONTO		1	93	536	6235	6.0	67	84	407	1715	5	20							943	751
TUMACACORI	2		174	1379	9876	8.0	57												1,379	1,607
WALNUT		1	24	97	1455	4.0	61										[illegible]	19	116	285
WHITE SANDS	1/5		155	755	2700	4.8	18								2	* 400	32	374	2,309	4,402
WUPATKI		1	9	26	350	3.0	39								1	35	1	2	63	106
YUCCA HOUSE	0	0																	0	0
HEADQUARTERS															3	250			250	
TOTALS	13.5	5	964	6,568	39,375			461	3008	9220			128	1072	20	2,283	12	1156	14,947	14,044

* Includes 400 at two showings of White Sands moving picture reels.

STATISTICAL SUMMARY ON EDUCATIONAL CONTACTS FOR FEBRUARY 1936

SOUTHWESTERN NATIONAL MONUMENTS

MONUMENT	EMPLOYEES		GUIDED TRIPS					MUSEUM LECTURES					MUSEUM ATT'D		LECTURES OUTSIDE		MISC		TOTAL EDUCN. CONTACTS	TOTAL TRAVEL
	PERM	TEMP	NO	ATT	TIME	AV ATT	AV TME	NO	ATT	TIME	AV ATT	AV TME	NO	ATT	NO	ATT	NO	ATT		
ARCHES	1/165																		(NO REPORT)	
AZTEC	2		57	243	1780	4.3	31	51	244	1055	4.8	21			2	420			907	287
BANDELIER	1	1	25	135	1482	5.4	60										8	21	156	252
DE CHELLY	1		1	2	90	2	90												2	5
CAPULIN	1/165		2	9	150	4.5	75												9	500
CASA GRANDE	2	1	384	3043	14497	7.9	38	256	2332	5330	9	21	81	711	1	100			6,186	3,043
CHACO CANY.	1		9	22	935	2.5	104	2	6	135	3	68							28	379
CHIRICAHUS	0																		0	300
EL MORRO	0																		0	0
GILA CLIFF	0																		(NO REPORT)	
GRAN QUIV.	1		48	129	1743	2.7	36	11	36	199	3.3	18							165	129
HOVENWEEP	0																		(NO REPORT)	
MONTEZUMA	2		69	308	2503	4.5	36	73	299	1370	4.1	18.8							807	436
NATL. BRID.	0														3	112	3	30	142	0
NAVAJO	1/165																14	35	35	0
PIPE SPG	1-Lab.		7	13	190	2	27								2	32			45	137
RAINBOW	0																		(NO REPORT)	
SAGUARO		1	106	383	3538	3.6	33												383	2,000
SUNSET CR.	0																11	35	35	74
TONTO		1	82	519	5420	6.3	66	81	452	1600	5.6	20							971	724
TUMACACORI	2		254	1432	8215	5.6	32												1,432	1,512
WALNUT		1	29	144	1512	5	52										8	13	157	187
WHITE SNDS	1/5		56	781	4445	14	80										43	295	1,076	3,794
WUPATKI		1	12	37	455	3	38										9	31	68	70
YUCCA HOUSE	0																		0	30
HDQTERS															3	420				
TOTALS	13.2	6	1141	7200	46955			474	3369	9680			81	711	11	1084	96	460	12,824	13,859

*12 Permanent Custodians and Rangers; no ranger naturalists; and 1 temporary ranger.

** 1-radio broadcast on subject of Aztec; Station KIUP, Durango, Colo; Feb. 16/36

WILDLIFE REPORT

By Regional Technician Adrey Borell

(Extracts from Mr. Borell's report for the period Dec. 19, 1935, to January 14, 1936):

SAGUARO NATIONAL MONUMENT. Dec. 19, 26, 27, and 30.

(1) Weather: mild and sunny most of the time; a little rain and some cloudy weather.

(2) Scientific studies: Work here was the at request of Supt. Pinkley and the Washington Office, and involved the study of possible boundary changes and the report that mountain lions were killing a large percentage of the calf crop. There is agitation to have a large area of grazing land now in the monument returned to its former National Forest status. I have requested maps of the area, and when they have been received, will make a special report on suggested boundary changes as soon as the maps are received.

Two cattlemen said that the cows which range in the foothills come out with the usual number of calves, but those which range higher up on the mountain come out with very few calves. One permitee claimed the mountain lions get between 30 and 50 claves each year from 500 cows. He claims to have found several freshly killed calves about which were lion tracks. The cattlemen of that area have offered a bounty of $30 or $35 for each lion killed. The cattlemen agreed that if control is to be carried on it should be done by a Federal lion hunter. They also agreed that private lion hunting parties should not be permitted on the monument even if control is authorized. Most of the time there is no Custodian or Ranger there to enforce any park regulations.

Mr. Gorsuch, Mr. Winn, and Dr. Vorhies said the Rincon Mountains (part of which are in the monument) were formerly well populated with lions. They seemed to think that since deer and peccaries are present but not numerous, and since grazing is permitted, some control of lions is justified.

Mr. Williams of the Biological Survey in Phoenix told me he has three lion hunters in the southern part of Arizona, and expected to send a hunter into the Rincon Mountains in the near future. Said he had no instructions relative to hunting on the portion of the Rincons lying within the monument. Unfortunately, I was unable to discuss the subject with Mr. Frank Colcord, biological survey hunter, who has hunted lions in the Rincon Mountains.

The upper portion of the monument is extremely steep and rough, and I think the lions can pretty well take care of themsleves. All reports indicate that lions are relatively numerous in the Rincon and adjacent Catalina Mountains. I suugest that Mr. Williams be asked for a report on all recent lion hunts in the Rincon Mountains, and recommendations regarding control of lions be based on the results of these hunts.

Some interesting information on birds and mammals was obtained. This

will be included in my report on suggested boundary changes as the wildlife is important in that connection.

(3) ECW Supervision: Practically all of the present work consists of obliterating old roads among the giant cactus.

CASA GRANDE NATIONAL MONUMENT. December 21,22,23, and part 31.

With Supt. Pinkley, Park Naturalist Rose, and Engineer Diehl went over wildlife work and boundary problems of Saguaro, White Sands, Tumacacori, [illegible] Wupatki, and other southwestern monuments. Considerable time was given to plans for the development of White Sands extension, and the museum at Bandelier.

Prepared six bird skins during evenings as demonstrations for naturalist force.

Twenty four species of birds were recorded. Three of these were new records for the monument:

1. Lincoln Sparrow, one, Dec. 21, prepared as specimen.
2. Virdin, one Dec. 23, one Dec. 31.
3. Burrowing Owl, one Dec. 22.

TUMACACORI NATIONAL MONUMENT. December 29.

Work here was the result of a report that hawks were over-abundant and were taking toll of song birds, that pocket gophers were destroying the cactus, and ground squirrels were damaging the mission ruins.

Hawks: This monument contains only 10 acres and is located in the edge of a wash which is overgrown with willow, cottonwood, and brush. Hills and valleys border the creek. This makes ideal habitats for small birds and several species of hawks. I saw one marsh hawk, one prairie falcon, one sparrow hawk, and one sharp-shinned hawk. The latter two had been shot recently.

Custodian Boundey said that sparrow hawks and sharp-shinned hawks are the chief offenders and frequently catch birds about the mission. He feels that control is desirable. Undoubtedly, sparrow hawks do take some birds at Tumacacori, but I believe that a careful study would show their food to consist mainly of insects and mice. Be that as it may, sparrow hawks are interesting birds and worthy of complete protection.

It is generally recognized that sharp-shinned hawks feed primarily on small birds. Since the area is ideal for sharp-shinned hawks they probably do kill a good many birds on the monument. There are several factors involved in any control campaign and I do not think control of hawks should be authorized in any park or monument unless some species upon which they prey is in danger of extermination. A great many small birds, especially

members of the sparrow family, winter at Tumacacori, and I don't think their numbers will be noticeably affected by the hawks.

It has been the practice to clean up the monument about four times a year. Most of the weeds, grass, and lower dead branches from the mesquite are removed and burned. This cleanup destroys much valuable shelter for small birds, and undoubtedly increased the kill by hawks. Clean-up should be confined to the area immediately around the mission and residences.

Pocket Gophers: A number of cacti and agave plants have been killed by pocket gophers which eat the roots and pulpy bases. Gophers are numerous and widely distributed over the area. I believe that control of gophers about the buildings where they are destroying cacti is justifiable.

Ground Squirrels: Mr. Boundey showed me several places where squirrels have dug burrows into the walls of the ruins. Since the ruins are the principal feature of the monument I think that rodents which burrow into the walls should be controlled.

There are a good many exotic plants growing about the mission and residences. Some of these or their ancestors were planted by the Spanish padres, but others have been planted recently. Study should be made to determine which species were planted by the padres and which have been planted recently. Those planted by the padres should be preserved for their historical significance, but the recently planted ones should be replaced by native species as rapidly as opportunity offers.

Eighteen species of birds were recorded; of special interest were three Inca doves.

*****

ENGINEERING

By Associate Engineer J. H. Diehl

On the 8th of February a trip was made to White Sands National Monument, where engineering matters and points of construction were discussed with John A. Happer, project manager for the Resettlement Administration Project adjacent to the monument. Returned to Carlsbad that same night.

On February 12 I left Carlsbad for Bandelier National Monument where on the 13th the various projects under ECW construction were gone over with Project Superintendent Chase and Landscape Architect Richey. Returned to Carlsbad on February 14.

The afternoon of February 17 I left Carlsbad Caverns for Casa Grande National Monument, arriving the afternoon of the 18th. Superintendent Pinkley was absent on official business in Washington.

On the 19th, with Acting Superintendent Miller, and Landscape Architects Langley and Richey, various monument matters were discussed.

Leaving Casa Grande National Monument the morning of the 20th with Architect Langley we drove to Tonto National Monument, where with A. E. Clark of the survey crew a route was flagged on a maximum grade of 8% for the survey of a proposed entrance road. Langley and myself returned to Casa Grande that same evening.

Leaving Casa Grande with Mr. Langley the morning of the 21st, we met R. D. Sias, ECW inspector for State Parks, and together the three of us went out to Saguaro National Monument and looked over suggested changes on the approved plan for a road project to be constructed by the State Park CCC Camp in that vicinity. Leaving Mr. Sias in Tucson on our return about 1:00 PM, Mr. Langley and myself went on to Chiricahua National Monument that evening where we covered the various ECW projects with Project Superintendent Stevenson on February 22.

On February 23 we left Chiricahua in the morning. Dropping Mr. Langley in Tucson, I stopped at Casa Grande for a couple of hours and then drove on to Tonto National Monument that night.

February 24 and 25 assisting Clark and Schmidt (my survey crew), with the help of Ranger Steen, the preliminary road alignment was staked, 7200 feet in length from the parking area to a connection with the Apache Trail Highway.

The afternoon of the 25th I visited the cliff dwellings at Tonto with Ranger Steen and offered some suggestions as to stabilization, leaving about four o'clock and returned to Casa Grande National Monument.

The 26th and 27th were spent on office work at Coolidge.

On the 28th I drove to Mountainair, New Mexico, and on the 29th went out to Gran Quivira National Monument to attend to engineering duties pertaining to the pump installation, and drove on to Alamogordo, New Mexico, that night.

The remnants of my survey crew, Clark and Schmidt, were at Carlsbad Caverns on topography until February 18, when they left for Tonto National Monument, where they will be busy for the balance of February.

Chief Engineering Aide J. H. Tovrea has been busy the entire month on maps and plans at Headquarters, Southwestern Monuments, Coolidge, Ariz.

****

CAPULIN GEOLOGY

By Regional Geologist Wegemann

On the evening of July 13, Mr. Evison and I drive from Estes Park to Denver. Here I leave him about 11:00 P.M. to take the train East and

after a few hours' sleep start at daylight for Raton and Santa Fe. I reach the latter place about three o'clock on Sunday afternoon and leave at 7:30 the next morning for Capulin National Monument.

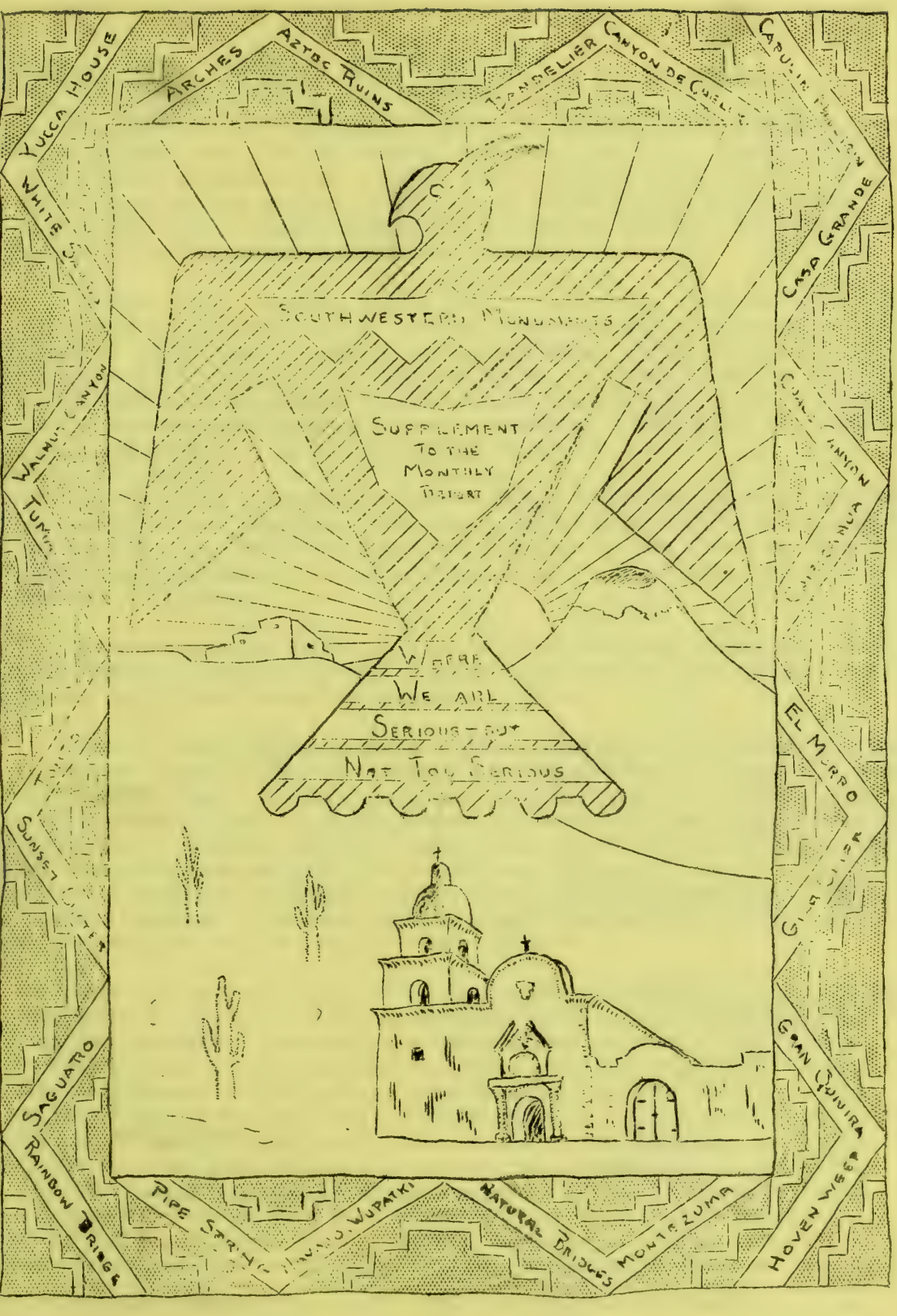
As I drive up the excellent graded road which leads to the top of the extinct volcano, I note peculiar smooth plains in the layers of lapilli which form the side of the mountain. It occurs to me first that these plains may be slip plains between successive layers of lapilli, but Mr. Farr, the custodian, tells me that other geologists have suggested that these plains are former surfaces on which vegetation grew and that they white deposit along them which I took for Alkali, may in reality be wood ashes.

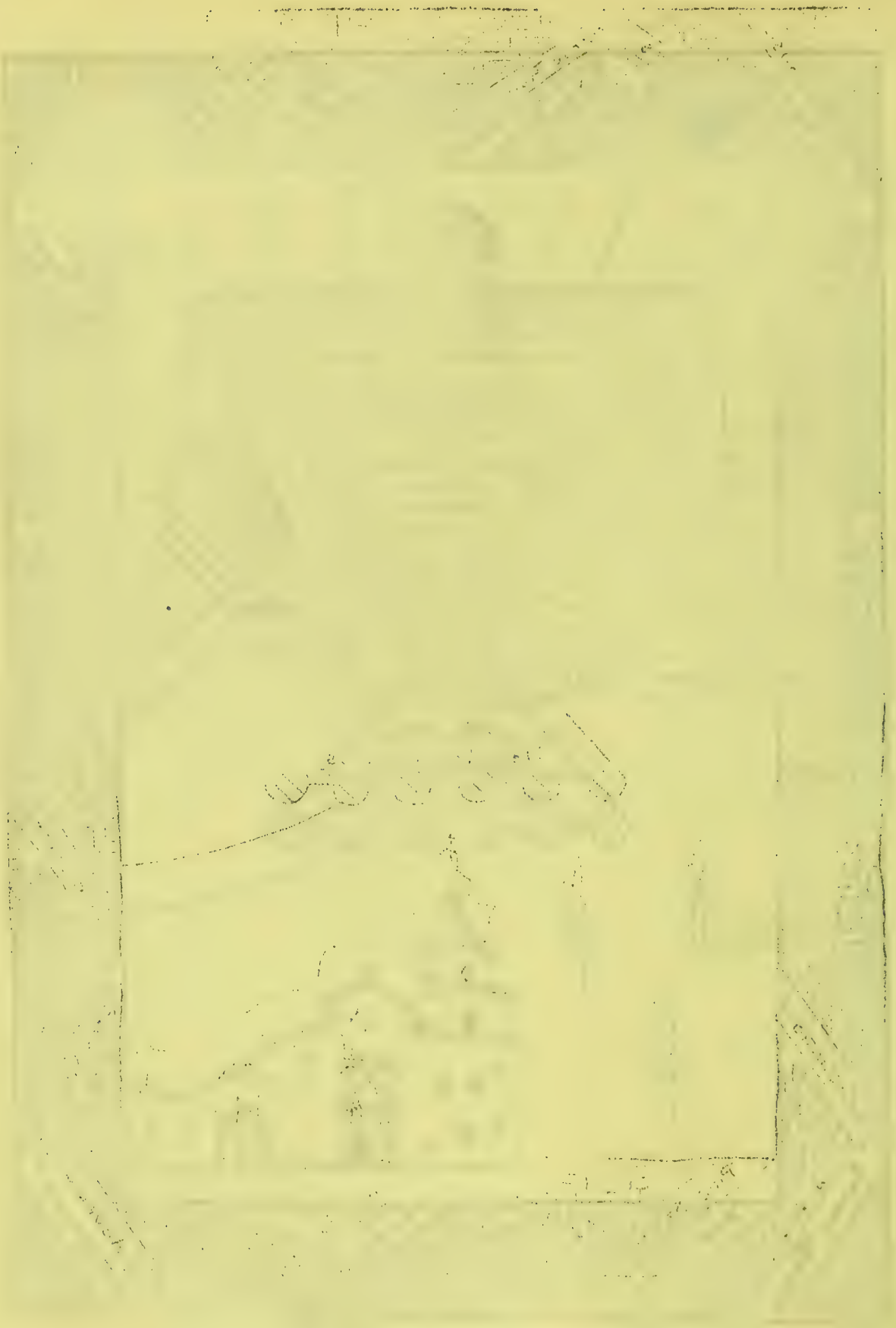
There are three colors of lapilli, black, red and buff, and I note also that there are two colors of lava, black and red, the red being the more recent. These are represented in the flows at the base of the volcano. The crater, with its lowest side toward the west, is very typical.

At the end of the road I leave the car and climb the rim to one of the high points from which I obtain an excellent view. There must be some fifteen volcanic vents in sight from this one crater, and a very interesting study could be made of this entire region. The number of volcanoes should be determined and their locations mapped. The number of the eruptions represented by the lava flows should be determined, and the relation of these flows to the flows capping the mesas near Raton. Low dip is apparent in some of these lava flows and this may be due to the angle of flow at which the lava solidified, although it may be due also to recent movement. On one of the flows in the plain I note crescent shaped flow lines developed where the lava cooled near its edges and flowed forward in the middle.

After visiting the volcano I called upon Homer J. Farr, the custodian in Capulin, and had an interesting talk with him. He cannot be at the volcano all of the time, and there is great need of descriptive signs calling the traveler's attention to the phenomena which are easily observed but which he does not understand. I have seldom seen an area which exhibits so well the phenomena of volcanic eruptions and I feel that it is well worthy of intensive study and that some arrangement s should be made for signs on the ground and possibly for the printing of a booklet descriptive of the geology.

****


YUCCA HOUSE
ARCHES
AZTEC RUINS
CANYON DE CHELLY
CASA GRANDE
WALNUT CANYON
SOUTHWESTERN MONUMENTS
SUPPLEMENT TO THE MONTHLY REPORT
WE'RE WE ARE SERIOUS — BUT NOT TOO SERIOUS
EL MORRO
SUNSET
SAGUARO
RAINBOW BRIDGE
PIPE
WUPATKI
NATURAL BRIDGES
MONTEZUMA
HOVENWEEP



NAVAJO STUDY PROJECT

By Betty Budlong

Canyon de Chelly National Monument is situated, as all familiar with the Southwest know, in the heart of the Navajo country. Primarily, the 83,000 acres of land which comprise this area were set aside for the preservation of things prehistoric and of an archeological value, as well as for the scenic grandeur and beauty of the two canyons, del Muerto and de Chelly, and their numerous tributaries.

We have here, however, a most unique situation. From the rim of the canyon the interested visitor, looking across to the opposite side, beholds a pueblo cliff dwelling, silent and inscrutable, fading agelessly into its hiding place on the ledge of a sandstone wall. Looking next to the floor of the canyon, he discovers a Navajo hogan, teeming with life, a trim little peach orchard vivid behind it, a square of dark earth near by which will yield food to a people living and vital.

The story of the folk who inhabited the cliff-dwelling is a fascinating legend to our visitors. The people of the hogan are a tangible reality and, as such, arouse an immediate interest in the person to whom this country and knowledge of its inhabitants, past and present, may be either familiar or quite new.

For this reason, ethnology will play as important a part as archeology in the development of the monument if we are to glean from it the richest and finest possibilities that it has.

One of the projects upon which we are working will ultimately cover all phases in the life of the Navajo Indian; his mode of dress, his means of transportation, his food, the various types of homes he builds, his arts and crafts, etc. A great deal of this material will, of course, be assembled in photographic form, thus incorporating the so-important visual side of museum exhibits and education. That which can be had in specimen form will be displayed in a simple and lucid fashion and more detailed material filed away for the use of the student and those who wish to explore the subject more thoroughly.

With the cooperation of the Home Economics Department of the Indian School at Chin Lee, we have been working on the art of native weaving of rugs and blankets. Last fall and early winter, a Navajo girl conducted a class one day a week, and the children, under her supervision, carried the wool through all its stages from "sheep to loom." This included, briefly: washing the wool in suds obtained from yucca (or soapweed) roots; the use of a white clay found on the hills around Chin Lee which, when rubbed into the wool, renders it very white; carding (black and white wool are carded together to produce gray); spinning of the warp, woof and marginal threads (the warp thread is spun many times until it is about the consistency of heavy string; the marginal thread consists of two strands of second spinning, or woof, thread which are spun together

on the short end of the spindle. This thread is used to edge the rug); dyeing with all native dyes and, finally, the weaving of a small rug. I attended many of the classes and Bob came as often as he could with his camera and took photographs. Several times during the fall we made trips to the canyon rim to gather dye plants, but are waiting now for spring to bring the majority of these. I have obtained a most comprehensive paper on Navajo dye plants which will aid us greatly in making a fine collection at that time when, armed with plant presses, we start out to comb nearby areas of the reservation.

Among those that we have obtained, with representative skeins of dyed wool and the formulae used, are: juniper, sagebrush and mistletoe which, when combined, give a mustard yellow color to the wool; Mormon tea, which produces a delicate mauve; mountain mahogany root bark, which gives a reddish brown, and the leaves from the wide-leaf yucca, which give a light tan. In addition to these, we have 30 or more formulae for native dyes, but we will be unable to obtain specimens of the plants and skeins of wool dyed according to these formulae until the coming summer.

The plant or plants are boiled in water for an hour or so before the spun wool is added. The two are then boiled together for a time varying anywhere from one to three hours depending upon the depth of color desired. Often a mordant, such as alum or juniper ashes, is used in this dye water to "set" the dye, but the use of this varies with individual preference and is not always considered necessary. A plant boiled in an iron vessel will sometimes give a very different shade from the same plant boiled in a container of some other metal. Black and brown wool are usually intensified, seldom being left in their natural state. Navajo women jealously guard formulae that they concoct from the rarer plants and it is often very difficult to obtain information readily. However, as time goes on and we become better acquainted with them, we are in a position not only to help keep alive the, at present, have for Canyon de Chelly and the Southwest as a whole, access to invaluable records for future generations.

This project has given us an excellent introduction to the art of weaving and dyeing, but we are prone to consider it more in the nature of a preliminary step. This summer, we plan to have one of the best rug weavers in the community make a rug for us in an old, unbordered pattern, using native dyes throughout. Every step in the preparation of the wool and dyes, the setting up of the loom, and the process of weaving will be photographed in detail. Specimens of dye plants will be photographed, pressed, and labelled with common, Navajo and scientific names. When the rug is finished, we shall buy it and use it as the nucleus of a major exhibit in the future museum. This exhibit, as we now visualize it, will be arranged in panels containing specimens, photographs and other pertinent data, these, in turn, arranged with the completed rug in a natural order of sequence. Thus, when the "rug-minded"

visitor steps into the museum he may obtain, in a short space of time, a comprehensive idea, not only of how the Navajo woman weaves her rug, but through what preliminaries she must go before the actual weaving begins.

So it is that the life of the living Indian will be presented to our visitors along with geology, botany, zoology, archeology, and the many other related sciences, a study of all of which is a part of our work here at Canyon de Chelly National Monument.

****

BIRD BANDING NOTES

By John E. Fast

(Ed. Note: One of the Southwestern Monuments' finest friends is John E. Fast, Chicago manufacturer, who, with his gracious wife, has been spending the winter season near Casa Grande National Monument for several years. Becoming interested in archeology, he last winter made a rather thorough survey of anthropomorphic and zoomorphic forms on Hohokam pottery. This project is still under way, and Mr. Fast's interest has led him to continue his archeological studies at the University of Chicago.

Through the medium of the Southwestern Monuments' Monthly Report and Supplement, he developed an interest in bird banding. The following notes tell of his experiences during the month of February.

During February, Mr. Fast banded almost as many birds as the Casa Grande station had banded during six months. His scrupulous carefulness makes him an invaluable collaborator, and the members of the Naturalist Staff wish to take this opportunity of expressing their thanks for his fine work.)

At the suggestion of Junior Park Naturalists King and Caywood I am putting down on paper for your files my experiences in bird banding during the month of February. As a good friend of your Service of some years standing, and a regular winter visitor to your pleasant locality, the boys suggested that I take a couple of bird traps that were not in use and see what I could do as a cooperative bird bander at my own quarters, Vah-Ki Inn. For the sake of the record I should explain that this adjoins the Monument property, is separated only by an irrigation ditch, and is covered with the same type of vegetation, mostly mesquite and creosote bush. As far as the birds are concerned it is one continuous piece of land. From headquarters to my temporary home is very nearly half a mile.

The first two days of my bird trapping resulted in 19 Gambel sparrows, perky little fellows, with black and white stripes on the head, in the adults, and brown and buff stripes in the immatures. These

were promptly taken over to headquarters, banded, held safely overnight and released there the next morning. One of these concluded that there was no danger in traps, so promptly got caught over there at 11:30 A.M., and then returned home for his evening meal, to be caught again, here, at 4:30 P.M. No other of these 19 birds has been caught again, at your traps ("repeated," is the bird banders term), yet 15 have repeated over here. They evidently have a limited area they call home, and return to it promptly when taken away.

This was astonishing to me, and I thought it would be interesting to test still further their homing instinct. I began to collect birds in lots of five in small transfer cages, taking as many full lots of five as I could gather each day before noon. I then released them, five at a time along the road to Phoenix, five the first mile, five the second mile, five the third mile, etc., up to ten miles. Newly banded birds, repeats, adults, immatures were all the same to me except that a bird sent on this mission and again caught was excused from further service. I released them all before noon to give them the best chance possible. The Phoenix road is toward the northwest. The bird book states that Gambel Sparrows migrate northwest and spend the summer in the territory from Montana to Oregon, and north through Western Canada and as far as Alaska, so that the sparrows might be expected to say to themselves, "Well, we thumbed a ride this far anyway," but - no - back they came, and are still coming. The record of birds which flew back to Vah-Ki is as follows:

One mile ------ five	six miles ------ one
two miles ----- one	seven miles ---- one
three miles --- two	eight miles ---- none
four miles ---- one	nine miles ----- one
five miles ---- none	ten miles ------ one

It may be expected that more are back, but are too smart to enter traps again. Migration takes place in about six or eight weeks, and it will be interesting to note after that time how many additional ones have returned and been caught. All of these returning birds practically have to fly over the traps at Headquarters, yet none have been taken there.

A White-rumped Shrike caused the next excitement. A shrike is also known as a Butcher Bird. It subsists on small birds, grasshoppers and other insects, and occasionally impales them on thorns for its future food supply, much as a butcher hangs meat on hooks (or used to, at least). It is a dressy bird, with black and white contrasts, and a black band extending around its head, similar to the popular idea of a bandit. It is a villain, all right. One was noticed one morning walking around a sparrow trap, doing its best to get at the birds inside. A small, two-compartment trap, without bait, was placed near the sparrow trap in the hope that the shrike would walk into it, since it was so absorbed in its

nefarious intentions. This was repeated several mornings, as there were a half dozen or so sparrows in the trap each morning. The fourth morning it was caught in this way and is now proudly (?) wearing band No. 36-101404. Mr. King released it at Florence, nine miles east of here the next morning. I wish I could have sent it many more miles away, because two new shrikes showed up the next morning, to take its place, and a week later, Mr. Caywood saw a shrike near here with a shiny new band on its leg. One morning I found a dead Gambel Sparrow in a trap and a shrike sitting in a nearby tree. Later that day the same two-compartment trap contained a small, frightened, exhausted but otherwise unharmed Gambel Sparrow in one side and a shrike in the other. The shrike was banded, securely boxed and given to a party of tourists who agreed to release it at Tucson, 66 miles southeast.

The second fatality occurred several days ago, when another dead Gambel Sparrow was found in a trap, with a pathetic lot of tiny feathers around. Shrikes are one of the two kinds of birds that the Biological Survey at Washington permits bird banders to shoot, and then only when they become a serious menance to trapped birds and when they cannot be caught and transported far away. Drastic action is now contemplated by Messrs. King and Caywood, but for the present we hope to capture the others. The other bird that can be killed is the English Sparrow, which is noisy and dirty, but whose principle fault is that it chases other birds away.

Three Cactus Wrens have been banded. They seem to enjoy human society. There are several around the house all the time. One sits up on the chimney every morning and gives its characteristic call or line of chatter. A pair are transporting nesting material to a mesquite tree quite near the house. They appear to be full of curiosity. One was caught in a two-compartment trap without bait, but near a larger trap containing Gambels. It repeated the next morning in the sparrow trap. I am going to try nesting materials, cotton, string, etc., as a bait for them and other nesting birds.

On February 6 I caught a male Arizona Cardinal. "Cardinalis cardinalis superbus" is the technical name, and superbus is certainly a fitting term, with his bright scarlet coat tastefully trimmed with a little black. He was an upstanding bird that fought every second of the time he was being banded, but did not appear to be frightened at any time. He was released and showed up again in two days, and walked into the trap again. That time I did not subject him to the indignity of handling him, but simply opened the trap, taking one chance in a million that he was not my bird but one that someone else had banded.

Mr. Caywood and I put in a few active minutes one dark evening trying to catch a Say Phoebe with a net in the large porch of the Inn. We finally succeeded after much ridicule and almost hysterics from our wives. They said we looked so silly prancing around with flash lights

SOUTHWESTERN BIRD BANDING TOTALS

Species	Bandelier		CasaGrande		Chaco		Montezuma		Navajo		Pipe Spr.		Walnut		Wupatki		Total
	Prior	Feb.	Prior	Feb.	Prior	Feb.	Prior	Feb.	Prior	Feb.	Prior	Feb.	Prior	Feb.	Prior	Feb.	
Bluebird,Ch-b.													215				215
Cardinal,Ariz.				1													1
Crossbill,Bend.													17				17
Chickadee,Mtn.									6				3				9
Creeper, R.M.	2																2
Dove, W.Mourn.			2														2
Finch, House			76	53													129
Flicker,Red-sh		1															1
Fl'c't'r,Ariz.			2														2
Gldfnch,Gr-bkd													2				2
Jay,Long-crstd	2																2
Jay, Woodhouse	3								6								9
Junco,Gr-hded	33	16							8								57
Junco,Mntana									9								9
Junco,Pnk-sded	5	2															7
Junco,Rd-bcked	3	1							2				13	25			49
Junco,Shufeldt	6	1							13				5	5			30
Mckngbird, W.			2														2
Nuthatch,Pyg.	12	9											24	1			46
Nuthatch,R.M.	1	1											6				8
Owl, W. Horned			1														1

Species	Bandelier		CasaGrande		Chaco		Montezuma		Navajo		Pipe Spg.		Walnut		Wupatki		Total
Phoebe, Say			17	1													18
Quail, Gambel			21	1			5										27
Roadrunner			3														3
Robin, Western													7				7
Spscker, R-nap.													4				4
Spscker, R.M.													2				2
Shrike, W-rum.				2													2
Siskin, Pine													1				1
Solitaire, Town.													7				7
Sparrow, Gambel			57	217													274
Sparrow, W-cr.									6								6
Swallow, Ro-wng			3														3
Thrasher, Bend.			3	1													4
Thrasher, Criss.			7														7
Thrasher, Sage															2		2
Titmouse, Gray													1				1
Towhee, Gr-tail.				2											1		3
Towhee, Spurred		1															1
Woodpckr, Gila			6	1													7
Wdpkr, RM Hairy	1																1
Wdpkr, Mearns Wren, Cactus			28	6									9				9 34
SUB-TOTAL	73	32	228	285	0	0	5	0	50	0	0	0	316	31	3	0	
TOTAL		105		513		0		5		50		0		347		3	1023

and small nets like some weird sort of ballet. Anyway, Mr. (or Mrs.) Say Phoebe is wearing band No. 36-21800.

House Finches are tiny little birds. The male is tinged around the head and shoulders with red, a beautiful little bird with a cheerful song. They appear in flocks at my drinking pool every afternoon. The ramada or shelter at the Monument picnic grounds is their favorite roosting place. Messrs. King and Caywood and I repaired to this ramada with nets one night (wives remaining at home, by request). We caught and banded that evening 31 house finches, with a smaller number of repeats.

On the 24th I trapped and banded a Bendire Thrasher. This is a handsome grayish brown bird a little larger than a roben. Its mate sat in the tree above the trap and kept up a constant singing all the while the bird was there, and when I took it to headquarters to be banded, since I did not have a #2 band, the mate stayed in the tree, calling until the bird was brought back. The song resembles that of the Mockingbird, but does not have its range of variation or quality of mimicry. After it was banded I brought it back to where it was caught so as not to disturb too violently its routine. Its mate flew down to it, but presto! out of a nearby tree came another one not noticed before. The three of them scrambled, hopped and fluttered around for a few seconds and when the dust had cleared away I had lost track of which was which, but one was sitting in a nearby mesquite tree and two were hopping up and down and fighting precisely like two young roosters. This continues intermittently around the place for about half an hour.

I have been fortunate to be able to band during the month of February 212 birds composed of the following:

1 Arizona Cardinal
1 Bendire Thrasher
1 Say Phoebe
2 White-rumped Shrikes
3 Cactus Wrens
204 Gambel Sparrows

Two of the Gambel Sparrows were banded as immature birds a year ago at the Monument, and returned to the same home grounds as adults after their long journey to the far north last summer.

Working with these birds has been an extremely pleasant experience, and I am grateful to your people for the opportunity of doing it.

****

BANDELIER BIRDS

By Betty Jackson

There has been so much warm weather this month that the birds were often able to find their own food, but the total new banded birds got up

32, of eight species. These are:

Grey-headed Junco, 16; Red-backed Junco, 1; Pink-sided Junco, 2; Shufeldt Junco, 1; Rocky Mountain Nuthatch, 1; Pygmy Nuthatch, 9; Spurred Towhee, 1; Red-shafted Flicker, 1.

Two of the formerly banded Pygmy Nuthatches died, apparently of exhaustion when I didn't visit a trap for four hours. One I practiced on, the other is a bird skin. It's not too handsome, but my fingers had difficulty maneuvering around a bird so small.

The birds seen around the canyon are about the same as last month. Besides those banded there are Robins, Solitaires, Long-creasted and Woodhouse Jays, Rocky Mt. Hairy Woodpeckers, Chickadees, Chestnut-backed Bluebirds, Canyon wrens, and a Sharp-shinned Hawk.

We nearly ran into a big Red-Tail on the Ramon Vigil Grant the other day. He swooped right in front of the car, and we could see every feather.

Turkey tracks can be seen in the mud almost down to the Chases' house. They are probably hunting the new sprouts that are coming up everywhere among the grass and weeds.

****

DATE SEEDS

(A premature report) By J. W. Brewer

In Dale's Bandelier Museum Comments (December, 1935) on page 479, Plate A, there is an illustration on the upper left, first above the boxed P. V similar to a midden to which I refer (which I call an "over the back fence" type of midden).

Part of such a midden occurs at the base of the low westernmost wall of Wupatki Pueblo; the southern part was removed by CWA and left a vertical face to slough off with every rain.

Having found some interesting sherds washing and falling out of this exposed face I have kept my eye on the spot for whatever might come to light. Late in January I was very surprised to see clinging to the face of the mound, about 6 inches below the surface, what appeared to be a date seed. Picking it up I noticed another almost buried one (the second seed was certainly in situ).

Never having heard of date seeds associated with a prehistoric ruin, I started investigating. At the Museum of Northern Arizona prehistoric dates were unknown. However Mr. A. F. Whiting, Curator of Biology, took the seeds to Mr. D. W. Albert of the University Date Farm who made the following statement:

1. The seeds are definitely date seeds.

2. Their condition indicates that they are old.

3. Assuming them to be typical (i.e. not extreme variations) they are not the imported Dromedary Date of today.

4. Possibly they are the Khadrowi variety which at one time was imported by the same firm.

5. So far as he knows, there is no other evidence to indicate the presence of date culture in prehistoric times.

6. Date seeds, from Europe, were distributed by the Spanish priests during the 16th century.

My theory is not, of course, that the seeds were the product of local palms, but that they are the products of trade--whether prehistoric or historic remains to be settled.

Mr. Watson Smith, Associate in Research Archeology with M.N.A. contributed the following interesting reference: (Bandelier in "Contributions to the History of the Southwestern Portion of the United States," Papers of the Archaeological Institute of America, American Series, V., 1890, speaking of Cabeza de Vaca's wanderings through Sonora, just previous to his reaching the Yaqui River)

> "It was only when they ascended the foothills of the Sierra Madre and penetrated into the deep gorges and valleys of that extensive mountain area, that a fertile land met their eyes, and at last they found Indians settled in small but more permanent villages--Indians who cultivated maize, who owned turquoises, although in small quantities, and who traded parrot's feathers for green stones, far in the north. The houses of these Indians were made of palm leaves tressed and plaited, and some of the buildings had earthen walls and a dirt roof.
>
> "All this is significant and enables us to identify the region, though not the exact locality.
>
> "A species of large green parrot inhabits the pine forests of the Sierra Madre as far north as latitude 30 ---
> --North of the Sierra Madre no species of the parrot tribe is permanent-----
>
> "Palms are found in the Sierra Madre and its tributary chains. They are especially fan-palms, and the houses of the aborigines of Sonora were often made of that material". (to which Bandelier puts the following foot-note) "At Arizpe, in the valley of Sonora, there is one specimen of the so-called date-palm----I have seen----small specimens of the

date-palm on the crest of Bacatehac, between Granados, on the upper Yaqui River, and the village of Bacadehuachi, on the outskirts of the Sierra Madre---"

Dr. Colton suggests a stratigraphic survey of the mound in which the date seeds were found, and we may be lucky enough to get Mr. L. L. Hargrave out here to do it when their excavation permit is granted for 1936. More later.....

****

SEVENTEEN YEARS AGO—

Blackwater, Arizona
March 6, 1919.

Dear Mr. Mather:

I submit the following report on the conditions at the Casa Grande Ruin National Monument for the month of February, 1919:

During the month 387 visitors and 135 automobiles have entered the reservation. The weather has been very pleasant and the roads have been in good condition throughout the month.

We have had no income and have made no disbursements during the month. We have left $141.81 from our allotment made by Service letter of September 9, 1918.

During the month I made a trip, under your instructions, to the Grand Canyon and the Petrified Forest. This took me away from this reservation from February 21 to the end of the month. I have been so busy that I have had no time for research work and that is a mtter to be regretted. I like to keep a little new work under way all the time, for I find that it doubles the interest of visitors to see something in the act of being opened. I wish in another year we could arrange to spend about $300 in experiments with test pits and trenches. My test pits on the elliptical mound have interested hundreds of visitors since I have opened them.

I have installed a telephone which is connected with the local switchboard in the town of Florence ten miles to the east of us. This has already saved several trips to town and will give me telegraph and telephone connections out over the state. You might change my telegraph address from Casa Grande to Florence, Arizona. The operator in Florence can send a message out to me at once over the telephone while from Casa Grande it has to wait over until the next day and come up on the stage to Blackwater by mail.

Cordially yours,

Frank Pinkley, Custodian
Casa Grande Ruin.

Blackwater, Arizona.
April 7, 1919.

Dear Mr. Mather:

I have the following report to make on the administration of the Casa Grande Ruin National Monument for the month ending March 31, 1919.

TRAVEL AND TRAVEL CONDITIONS

388 visitors and 173 automobiles have entered the reservation during the month. I think this represents a normal month of travel for this season of the year. The 31st of March closes my first year of service for the National Park Service, and during that year I have had 2862 visitors. I did not get instructions to check the number of automobiles until last fall so I am unable to give the actual number of machines.

In my report for September, 1918, submitted under date of October 1, I had the following paragraph on roads:

> "In my monthly report for July, under date of August 3, I spoke of a prospective issue of road bonds which our neighboring county on the south, (Pima), would vote upon September 10. I am now able to report that the bonds carried, the vote being nearly two to one in favor of them. It now remains for the proper Federal authorities to approve the issue. The plan contemplates the expenditure of about $40,000 on the road between Tucson and Casa Grande, (the town). Working in with this bond issue, the reclamation part of the Indian Bureau is to open bids on a combined diversion dam and bridge to be located just above Sacaton on the Gila River. If this bridge goes in it will make a through road along the line to be covered by the bonds above mentioned, from Tucson to Phoenix. This will put the Casa Grande Ruin between two good highways running from Tucson to Phoenix."

All bids failed on the diversion dam and bridge mentioned here, and, although the road money was to be expended, I had little hope of our Monument gaining much benefit. The bridge project is now being revived and there seems to be a very good prospect for the road to go through from Tucson to Phoenix. In that case I shall expect an increase in our number of visitors as soon as this bridge is built.

FINANCES

There has been no income during the month, and the disbursements have been $11.62 for reference books for office use, and $18.36 for material for repairs for the Custodian's house. This brings our total

expenditures from our allotment of $500 up to $388.16.

WEATHER:

The weather has been beautiful all month. The country generally has had good winter rains and range conditions are still good, but the grass is now drying up. More rain will be needed in the next week or two if the range stays good. All roads from Phoenix south to the border are in good condition and the usual heavy winter traffic seems to be using them, both the state travel and the through traffic to the coast.

GENERAL:

I was absent from the reservation on official business on March 17-18-19-20 and March 24-25. The first trip was to the Tumacacori Mission and Nogales and is detailed in my monthly report on the Tumacacori Mission. The second trip was to Tucson to attend a meeting of the Arizona Archeological and Historical Society, devoted to the Tumacacori Mission.

Cordially yours,

Frank Pinkley,
Custodian, Casa Grande Ruin.

**

Blackwater, Arizona.
Mary 7, 1919.

Dear Mr. Mather:

I have the following report to make concerning the administration of the Casa Grande National Monument during the month of April, 1919.

VISITORS:

During the month 445 visitors and 194 automobiles entered the Reservation. This compares with 430 for the same month last year and so must represent about the normal number of visitors for the month of April.

FINANCES:

There was no income during the month and no disbursements. We have $111.84 of our allotment of $500 made September 8, 1918, on hand, but have some bids out for signs which will use up $50 or more of it in May.

ROADS AND ROAD CONDITIONS:

We had very little rain during the month and the roads in Southern

Arizona are drying out and breaking up under the traffic. If we have no rain in May, and under normal conditions we expect very little during that month, the roads will get in bad condition and automobile traffic is liable to fall off.

Under a new state law passed at the recent session of the legislature, the board of supervisors have appointed a road commission of five members who are now studying road conditions with a view to submitting a comprehensive plan of improvement and asking the people to vote the bonds to carry out the plan. This bond election will probably be held next fall and a part of the plan is to surface twenty odd miles of the road running from Casa Grande on the Southern Pacific out nearly to the Ruins.

RESEARCH WORK:

My time has been so taken up during the month with the routine work, the handling of visitors and attending to the work going on at the Tumacacori Monument, that I have found no time for research work.

For some time I have had in mind an idea of trying some restoration studies of the ruins as they must have looked when they were inhabited. So far as I know this has never been tried with this group of ruins. I think it will prove interesting.

GENERAL CONDITIONS:

Water is getting scarce on the desert and range stock is drifting in on the desert near here and getting in on the reservation. They bother considerably around the well and around the various compounds looking for water. Nothing can be done toward keeping them out until the reservation is fenced.

Cordially yours,

FRANK PINKLEY
Custodian, Casa Grande Ruin.

****

WOOLLCOT AT WUPATKI

(Reprinted from the "Coconino Sun," Flagstaff, Ariz.)

Alexander Woollcott, celebrated author, critic and radio broadcaster, was guest of custodian and Mrs. Jimmie Brewer Saturday to Monday at Wupatki National Monument, northeast of here.

Several weeks ago Mr. and Mrs. Brewer in their snug apartment in the second story of the main pueblo at Wupatki listening to a Woollcott broadcast, heard him say he wished he could get away from New York to some place where there was no telephone and he couldn't be disturbed by someone calling up to say his maiden aunt had got into a jam and needed

his help. Jimmie wrote Mr. Woollcott that Wupatki, 14 miles away from the nearest phone, and as far from the nearest neighbor, was the ideal sanctuary.

He soon received a cordial reply in which Woollcott said his next cross-country itinerary would not include Flagstaff; then, while he and Mrs. Brewer were at Carlsbad, New Mexico, a few weeks ago, another letter came announcing that he would come through here.

Immie met the Woollcott Cadillac east of town Saturday afternoon and piloted it to Wupatki. With Woollcott was Joseph Hennessy, also of New York, who, though he had nothing to say about himself or his work, is believed to be a prominent Columbia professor and author.

The guests had a fine time at Wupatki, easy to understand by anyone who knows their delightful host and hostess. Sunday they visited and explored dozens of the ancient Indian ruins in that region, Woollcott evincing great interest, though he did say that such a strenuous day outdoors was something unusual for him, as for years since the World War in which he enlisted as a private and saw service in France, he has been notorious among his intimates as unalterably opposed to exercise of any kind and lovingly partial to soft couches and deep easy chairs. He told Jimmy that a big easy chair was his idea of the nearest earthly approach to heaven.

Mr. Woollcott left convinced he had slept in the oldest inhabited house in the United States. It was started in 1074, tree ring research shows, and the Brewer living quarters were built in 1135.

The guests came here from Los Angeles and left Monday morning to spend that night in Gallup. On their way here they spent Friday night at Kingman.

Woollcott known throughout the world in the last few years through his radio talks and his books, among the latter the big seller, "While Rome Burns," has for a much longer time been about the best known and liked New York theatrical first-nighter and critic. His celebrated book on Mrs. Fiske and her views on acting, actors and the problems of the stage, in 1917, and "The command is forward," in 1919, are among his most successful earlier works. He has been on the editorial staff of the New York Times since 1909, dramatic critic since 1914, was member editorial staff Stars and Stripes at the American front and with the American army of occupation. He is a bachelor, born in Phalan, N. J., 49 years ago this month.

****

SOUTHWESTERN MONUMENTS

MONTHLY REPORT

MARCH, 1936

DEPARTMENT OF THE INTERIOR

NATIONAL PARK

SERVICE

SOUTHWESTERN MONUMENTS
MARCH, 1936, REPORT
INDEX

CONDENSED GENERAL REPORT

Travel----------139
General----------140
Administration----------140
Maintenance, Improvements, New Construction----------141
Miscellaneous----------144
Activities of other Agencies in Monuments----------142
Flora, Fauna, Natural Phenomena-142
Use of Mon. facilities by Public-143
Protection----------143

REPORTS FROM THE MEN IN THE FIELD

Aztec Ruins----------159
Bandelier----------145
Bandelier, ECW----------147
Bandelier Forestry Report----148
Canyon de Chelly----------165
Capulin Mountain----------164
Casa Grande----------170
Chaco Canyon----------151
Chiricahua----------149
Chiricahua, ECW----------149
El Morro----------172
Montezuma Castle----------153
Natural Bridges----------175
Pipe Spring----------157
Gran Quivira----------169
Saguaro----------156
Tonto----------150
Tumacacori----------166
Walnut Canyon----------153
White Sands----------167
Wupatki----------161
Yucca House----------152

HEADQUARTERS STUFF

Branch of Education----------176
Branch of Engineering--------179
Proposed Rodent Control at Chaco Canyon----------180
Educational Contact Figures-----183
Closing, by the Boss----------186

THE SUPPLEMENT

Life Figures on Hohokam Pottery, by J.E.Fast and L.R.Caywood-------187
Educational Survey and Proposed Museum Exhibits Plan for Montezuma Castle National Monument, by Louis R. Caywood----------195
Seeing the Scenic West, a recent radio talk by Zeke Johnson--------222
Tabira's Water Supply----------225
Appreciation----------227
Great American Family, by Earl Jackson----------228
Northeast Building, Compound A, Casa Grande, by the Boss----------233
"Throne Room" in the "Clan House," by the Boss----------235
More About Peyote, by Fred Gibson----------237
Bird Banding in March----------237
Southwestern Bird Banding totals----------238
Ruminations, by the Boss----------240

SOUTHWESTERN MONUMENTS PERSONNEL

HEADQUARTERS, Southwestern Monuments, Coolidge, Arizona: Frank Pinkley, Superintendent. Hugh M. Miller, Acting Assistant Superintendent. John H. Diehl Associate Engineer. Robert H. Rose, Assistant Park Naturalist. Dale S. King and Louis R. Caywood, Junior Park Naturalists. A. T. Bicknell, Custodian on Special Detail. Robert L. Cole, ECW Clerk. Luis Castellum, Temporary Clerk-Stenographer.

GENERAL FIELD MEN: Charles A. Richey and Harry Langley, Resident Landscape Architects. J. B. Hamilton, Associate Engineer. J. H. Tovrea, Chief Engineering Aide. Andrew Clark, Topographer. Carl Schmidt, Rodman.

FIELD STATIONS:

1. Arches---Moab, Utah. J. M. Turnbow, Custodian.
2. Aztec Ruins---Aztec, New Mexico. Johnwill Faris, Custodian. Robert W. Hart, Ranger-Archeologist.
3. Bandelier---Box 669, Santa Fe, New Mexico. Earl Jackson, Custodian.
4. Canyon de Chelly---Chin Lee, Arizona. Robert R. Budlong, Custodian.
5. Capulin Mountain---Capulin, New Mexico. Homer J. Farr, Custodian.
6. Casa Grande Ruins---Coolidge, Arizona. W. J. Winter, Custodian. Charlie R. Steen, Park Ranger.
7. Chaco Canyon---Crownpoint, New Mexico. Thomas C. Miller, Custodian.
8. Chiricahua---Willcox, Arizona.
9. El Morro---Ramah, New Mexico. E. Z. Vogt, Custodian.
10. Gila Cliff Dwellings---Cliff, New Mexico. No Custodian.
11. Gran Quivira---Gran Quivira, New Mexico. W. H. Smith, Custodian.
12. Hovenweep---Cortez, Colorado. No Custodian.
13. Montezuma Castle---Camp Verde, Arizona. Martin L. Jackson, Custodian. Frank Fish, Ranger.
14. Natural Bridges---Blanding, Utah. Zeke Johnson, Custodian.
15. Navajo---Kayenta, Arizona. John Wetherill, Custodian.
16. Pipe Spring---Moccasin, Arizona. Leonard Heaton, Acting Custodian.
17. Rainbow Bridge---Rainbow Lodge, Arizona. No Custodian.
18. Saguaro---Tucson, Arizona. Paul Beaubien, Temporary Ranger.
19. Sunset Crater---Flagstaff, Arizona. J. W. Brewer, In Charge.
20. Tonto---Roosevelt, Arizona. Woodrow Spires, In Charge.
21. Tumacacori---Box 2225, Tucson, Arizona. George Boundey, Custodian. Martin Evenstad, Ranger.
22. Walnut Canyon---Flagstaff, Arizona. Donald Erskine, Ranger in charge.
23. White Sands---Alamogordo, New Mexico. Tom Charles, Custodian. Barry Mohun, Utility Man.
24. Wupatki---Flagstaff, Arizona. J. W. Brewer, In Charge.
25. Yucca House---Cortez, Colorado. No Custodian.

CONDENSED REPORT

Coolidge, Arizona
April 1, 1936

The Director
National Park Service
Washington, D. C.

Dear Mr. Director:

The Condensed Report for Southwestern Monuments for March, 1936:

TRAVEL

	March, 1936	March, 1935	March, 1934
Aztec Ruins	602	282	429
Bandelier	429	427	280
Capulin Mountain	400	611	450
Casa Grande	2,705	3,335	2,785
Chaco Canyon	453	308	202
Canyon de Chelly	25	0	---
Chiricahua	350	---	---
El Morro	16	4	---
Gran Quivira	152	293	305
Montezuma Castle	590	597	1,036
Natural Bridges	---	0	---
Navajo	---	6	---
Pipe Spring	119	195	617
Saguaro	2,000	---	---
Sunset Crater	136	55	---
Tonto	816	749	---
Tumacacori	1,573	1,837	1,215
Walnut Canyon	360	---	---
White Sands	4,685	---	---
Wupatki	104	33	17
Yucca House	---	4	---
Actual Reported Registration	15,515	8,728	7,336

The 14 monuments which reported both in 1935 and 1936 showed a decrease from 8,728 to 8,040---688 visitors, or 7.8%.

The 16 monuments which reported both in 1934 and 1936 showed a decrease from 7,336 to 7,127---209 visitors, or 2.8%.

Thus, it would appear that March, 1936, as a travel month was eight percent poorer than the same month in 1935; almost three percent poorer than the same month in 1934. Weather conditions, apparently, are entirely responsible. Although the northern portion of our area experienced a mild month, the heavily traveled southern monuments drew rain and cold for their weather allotment, and travel decreased.

CCC GENERAL

020 WEATHER

The northern part of our area experienced a rather mild month of March except for heavy snowfall late in the month. Wind bothered visitors a little at Chaco and Wupatki; dust appeared at Bandelier and Canyon de Chelly. Southern Southwestern Monuments which usually attract heavy travel in this month were visited by relatively cold and wet weather. Tonto, alone, received its normal quota of travelers. Ranger and forage conditions generally appear as promising. There has not been enough moisture to enable the Gila Desert to bloom with last year's abundance, however.

100 ADMINISTRATION

120 MONUMENT INSPECTIONS BY SUPERINTENDENT PINKLEY

Superintendent Pinkley and Acting Assistant Superintendent Miller visited the following monuments on business matters: Canyon de Chelly, Mar. 13; Bandelier, Mar. 14; Chaco Canyon, Mar. 16 and 17; Aztec Ruins, March 18.

Acting Assistant Superintendent Miller also visited Canyon de Chelly for an inspection of the custodian's new residence February 27.

123 VISITS BY NATIONAL PARK OFFICERS

Aztec Ruins: Ahrens and Cully, ECW, Denver Office. W. H. Wirt of Berkeley Office. Superintendent Nusbaum of Mesa Verde National Park.
Bandelier: W. H. Wirt, ECW.
Canyon de Chelly: Kenneth Saunders of Mesa Verde National Park.
Chaco Canyon: Custodian Faris and Ranger Hart of Aztec Ruins; Regional Wildlife Technician Borell.
Chiricahua: R. R. Robinson, master mechanic, Yellowstone; Ranger A. T. Bicknell; Regional Wildlife Technician Borell.
Gran Quivira: Associate Engineer Diehl, February 29 and March 14.
Pipe Spring: Landscape Architects Langley and Keeling; Park Naturalist Presnell of Zion National Park.
Tonto: Raymond Higgins of Oklahoma City Office.
Tumacacori: Master Mechanic Robinson and Ranger A. T. Bicknell.
Walnut Canyon: Ranger Frank Fish of Montezuma Castle.
White Sands: M. C. Huppock, assistant director, National Park Service Recreational Demonstration Group; W. H. Wirt, regional forester; Adrey Borell, regional wildlife technician; Vincent Vandiver and Dr. Lewis, geologists.
Wupatki: Ranger Steen, March 16; Ranger Erskine, March 23.

180 PUBLICITY

White Sands: Reference to this monument will appear in "Our Desert

180 PUBLICITY (CONT.)

Neighbors," by Edith M. Patch, McMillan Publishing Company. The monument also will receive publicity in the Continental Oil Company's exhibit in the Texas Centennial at Dallas. See Page 167.

Wupatki: Science News Letter for February 15 carried an account of "Hope Spinach," published last year in Southwestern Monuments Supplement to Monthly Report. See Page 162. "Arizona Highways" published an article on "ball courts" which mentioned Wupatki. See page 162.

200 MAINTENANCE, IMPROVEMENTS, NEW CONSTRUCTION

220 IMPROVEMENTS

Canyon de Chelly: Two lines of drainage trench run around new residence to prevent water damage. See page 165.

Chaco Canyon: One man used 10 eight-hour days painting tops of steel fence posts, building new water gaps, and maintaining fence. See page 152.

Pipe Spring: Old comfort station torn down and site obliterated. Another comfort station remodeled. See page 159.

Wupatki: Trail between Rooms 16 and 36 filled to suitable height and landscaped with loose rock material. See page 162.

230 NEW CONSTRUCTION

Bandelier: ECW progress as follows: (See page 147)

1. Roofing of Quarters No. 1 being applied. Rough plumbing is installed and interior partitions are ready for plaster. Building will be turned over to carpenters for inside finish work April 1.
2. Landscape crew worked half month on planting and obliterating. Other half month was spent completing grading slopes in Detached Section highway.
3. 450 additional feet of sewer line completed. This finishes the project. Residences are connected.
4. Storage tank (10,000 gallon capacity) and all connections completed.
5. Work continued on sign project. Many signs completed and shipped.
6. Museum building construction delayed pending receipt of lighting and ventilation plans.
7. Small quarry crew worked all month.

Canyon de Chelly: Custodian now removing forms, waterproofing water reservoir preparatory to further work. See page 165.

Chiricahua: ECW progress as follows: (See page 149).

1. Massai Point-Balanced Rock Trail now complete for 1,000 feet.
2. Echo Trail advanced 250 feet. Heaviest construction now complete.
3. 600 sq. yds. of banksloping on Bonita Highway completed. Material was used to obliterate borrow pits.
4. Sugar Loaf Trail approach widened for purposes of visibility.

230 NEW CONSTRUCTION (CONT.)

5. Ranger station 100% complete.
6. Bathhouse 100% complete.
7. Three fireplace and table sets constructed at Massai Point. On pit toilet moved.
8. Planting project under Foreman Fulton started.
9. Topography crew under Andey Clark finishing topographical map.

Gran Quivira: Pump house and water system work under Foreman Gipe progressing. Tank pit dug; lumber, cement, gravel on ground. See page 169.

Pipe Spring: ECW progress as follows: (See page 158).

1. Fencing project complete.
2. Diversion ditch project complete.
3. Parking area almost leveled but work is waiting on acquisition of truck to haul gravel.
4. Walk construction stopped until decision is made concerning historic dugout which was discovered in line with one of the walks.

300 ACTIVITIES OF OTHER AGENCIES IN MONUMENTS

320 COOPERATING GOVERNMENT AGENCIES

Chaco Canyon: Bert Coddington, agronomist, and L. V. Compton, biologist, both of Soil Conservation Service, conferred during the mo concerning rodent control on the monument in devastated areas. Se page 152.

Wupatki: National Forest Service is cooperating on proposed cattle guard on west boundary. Tentative arrangements are for Forest Ser vice to provide material, Park Service the labor. See page 161.

350 DONATIONS AND ACCESSIONS

Aztec Ruins: Earl Morris, Carnegie archeologist, kindly donated to the museum a copy of his invaluable excavation field notes. This acquisition greatly supplements our museum catalog, and will prove of increasing value from now on. See page 160.

White Sands: The collection of mammal and bird study skins previously made at White Sands by Adrey Borell, regional wildlife technician, transferred from the University of California, which had been storing them for us, to a storage case under the care of Custodian Tom Charles. Are available now for interested visitors and scientists. See page 168.

400 FLORA, FAUNA, NATURAL PHENOMENA

400 FLORA

Pipe Spring: Water line needed to irrigate 35 planted trees. See page 158.

400 FLORA (CONT.)

Wupatki: Ethnobotanical specimens received which had been identified by University of California through Field Division of Education Office. See page 162.

430 ARCHEOLOGY, HISTORY

Wupatki: Broken culinary olla which had washed out of ruin was repaired. See page 162. Party of local men re-started work on the long abandoned Doney Mine near the monument. See page 163.

460 BIRDS

211 new birds banded in Southwestern Monuments during March. Wupatki and Tumacacori, both important stations, started activities. Casa Grande station using colored bands on Gambel Quail, Cactus Wrens to facilitate life habits study. See page 237.

470 ANIMALS

Bandelier: The beaver which have been progressing up Frijoles Creek have constructed a sizable dam and seem ready to settle down. See page 146.

500 USE OF MONUMENT FACILITIES BY THE PUBLIC (See travel figures on P. 139)

530 NEWSWORTHY VISITORS

Bandelier: George Parker Winship of Harvard University; Jan Diemer, former consul from Holland; Spencer L. Baird, district counsel Reclamation Bureau; Frank Vesely, state land commission; C. M. Adams, sanitary inspector for U. S. Public Health Service.
Casa Grande: Drs. Charles and Will Mayo, Rochester, Minn.; Watson Smith, member of 1935 Rainbow Bridge Expedition; Dr. C. L. Fenton, palaeontologist.
Chaco Canyon: John C. Frost, United States Geological Survey.
Saguaro: Dr. Ira L. Wiggins, Stanford University.
Tonto: Mr. Norce Gladwin and Miss Emily Cross of Gila Pueblo.
Tumacacori: Dr. Era C. Bartle of San Luis Obispo, California, authority on fungi and spores.
White Sands: Leo McClatchy, Oklahoma City Newspaperman; Edith Patch, University of Maine, preparing book, "Our Desert Neighbors,"; M. L. Ormsby, chief clerk, New Mexico highway department; Mrs. Clyde Tingley, wife of New Mexico's governor; Henry E. Riggs, dean emeritus, School of Engineering, University of Michigan; Phillip Blossom, assistant curator, University of Michigan Museum.
Wupatki: Dr. W. J. Dakin, marine biologist, University of Sydney, Sydney, Australia.

CONDENSED REPORT (CONT.)

600 PROTECTION

630 ACCIDENTS

Aztec Ruins: Miss Segerburg, Durango, Colorado, fell while descending into Great Kiva and broke her leg. Is recovering nicely. See page 160.

640 DESTRUCTION OF ANIMALS

Chaco Canyon: National Park and Soil Conservation Service experts are making study of possible rodent control in especially eroded areas in this canyon. See Regional Wildlife Technician Adrey Borell's report on page 180.

650 SIGNS

Bandelier: Under ECW this camp is making signs to be used at various necessary places throughout the Southwest.

660 SANITATION

Casa Grande: Present defective sewer system may prove health menace in near future. See page 171.

900 MISCELLANEOUS

MAIL COUNT

Incoming:		
Government	1509	
Personal	864	
		2373
Outgoing:		
Government only	1547	
		1547
Total mail handled		3,920
Telegrams		
Incoming		38
Outgoing		47
Total correspondence handled		4,005

Cordially,

Frank Pinkley

Frank Pinkley
Superintendent

REPORTS FROM MEN IN THE FIELD

BANDELIER

By Earl Jackson, Custodian

VISITORS:

Visitors numbered 429, arriving in 124 cars, from 34 states, Washington, D. C., France, England, and Czechoslovakia. Only 24 states were represented by cars.

The six highest states by visitors were: New Mexico, 311; Texas, 17; Colorado, 15; Michigan, 9; Oklahoma, 9; California, 9.

Visitor attendance shows the biggest March in history, but only by an increase of two people over March of 1935. You might almost think I had juggled the figures to get that result.

The peak day was March 15, with 99 visitors.

Weather and Roads:

Days partly cloudy:	6.	
Days cloudy ------:	5.	
Days clear -------:	18	
Maximum temp. ----:	65.	March 9.
Minimum temp. ----:	20.	Feb. 25 and March 23.
Mean Maximum -----:	56.9	
Mean minimum -----:	27.9	
Precipitation ----:	.44	Against .10 for March, 1935.
Snowfall (traces)-:		Feb. 25 and March 23.
Rain and sleet ---:		March 22
Dust storms ------:		March 5 and March 11.

Weather has been mild, with a low percentage of stormy and windy days. However, dust was heavy for five days. With considerable more moisture than for the same period last year, the travel record is encouraging.

Roads, during the greater part of the month, have been good, and at the present time are in excellent condition. At no time have they been anywhere near impassable.

Visitor Trip Chart:

Forty-six parties of visitors were taken through the ruins, numbering 151 people. Average time per trip was 56.7 minutes. Seven parties, numbering 16 people, were given talks without ruins trips, averaging 18.6 minutes per party. All visitors to the monument were contacted and registered.

Special Visitors:

February 29 - A. Hackenschmidt, Ladislaw Koldo, and Elmar Klos, from Czechoslovakia, were interested visitors. They are studying motion picture technique in the United States, with the aim in mind of developing motion picture advertising in their own country.

March 2 - Mr. and Mrs. George Parker Winship were in. He is the assistant librarian in charge of Rare Documents at Harvard. He wrote the Coronado Report (14th Annual Report B.A.E.)

March 5 - W. H. Wirt arrived for regular E.C.W. inspection. Jan Diemer, former Consul from Holland, now representative of newspapers and magazines for that country, was an interested visitor.

Selden E. Tracy, who was the chief engineer for the picture "Mutiny on the Bounty," was a visitor.

March 6 - Norman Smith, Junior Geologist, E.C.W. left, after a three-week stay.

Jerry Morse, former landscape architect at Bandelier, was in for a day.

March 7 - Mrs. Frank Kentnor, of the Rancho de Taos guest ranch, was in for the first time since the development work began here, and spoke highly of it. Mr. and Mrs. Spencer L. Baird, of Denver, were in. Mr. Spencer is District Counsel, Reclamation Bureau.

March 8 - Frank Vesely, State Land Commissioner, paid a return visit.

March 12 - Mr. and Mrs. P. R. Robertson, of Chicago, Illinois, were enthusiastic visitors. Mr. Robertson is the builder of Robertson Cameras, used in several divisions of the government.

March 13 - Carl F. Beall, range supervisor, Forestry Indian Service, and Joe A. Wagner, junior range examiner, were in on business with the Custodian. C. M. Adams, Sanitary Inspector for U. S. Public Health Service, was a return visitor with a party of friends.

March 14 - Superintendent Pinkley and Assistant Superintendent Miller were in for an official visit of one day. As usual, the Boss' visit straightened out a thousand and one questions which had been more or less hanging fire until he could come in.

Nature Notes:

The beaver, or beavers, (we can't tell for sure if there are two or one) which were working up Frijoles Canyon have built a good sized dam a quarter mile below the swimming pool, and this has the appearance of being intended for permanent quarters. Depredations in tree growth

are practically at a standstill.

Betty's bird banding is also at a standstill. With warm weather and spring coming on, the birds have forsaken their winter boarding places, and she has banded only two new ones - Grey headed Juncos. The other day she saw her first Red-winged Blackbird in the Canyon, and four Mourning Doves have made their appearance recently.

Bill Sharpe, Procurement Officer, living in the Technician's quarters now, advances a new theory as to why the Indians may have left this canyon. He thinks bed bugs drove them out.

General:

Picnic parties are again using the camp ground, although the deciduous trees haven't started to leaf out. Travel indications are looking better than they have since I have worked here. The Fred Harvey Indian Detour is doing the liveliest business in many long months. Nearly everyday brings at least one Harvey party to Frijoles Canyon, and frequently there are two.

The experiment we are carrying out with the Visitor Question Survey is quite interesting. It makes one sit back and reflect that, after all, there is a surprisingly high number of intelligent queries. And when this 30-day question list is turned in to you, you will read a list which, for intelligent answering of all issues, would require the presence of a New International Encyclopedia.

Discovered, the other day, two new ruins on South Mesa which I had not seen before. Each consists of about a dozen rooms, and each is situated on a crest of a low ridge, at the end. From one I followed a prehistoric Indian trail for a quarter mile in the direction of Frijoles Canyon before it was lost under the pine litter of the forest floor. These ruins, as far as I know, are not named. They are interesting because of the surprising amount of decorated pottery. Over fifty percent of the sherds seen were decorated, and a few glaze specimens were seen, so the dates of them would be, at the earliest, in the early culture horizon of Frijoles Canyon. A considerable number of sherds was gathered, these to be identified by type by Dr. Mera and used in the stratigraphy case of the Bandelier Museum.

****

BANDELIER ECW

By H. B. Chase, Project Superintendent

Roofing of Quarters No. 1 is in progress at this time, all rough plumbing installed and inside partitions constructed ready for plaster. The building will be turned over to the carpenter crew for inside finish work on April first.

About half of the month was devoted to planting by the landscape crew, the balance of the month to fine grading road slopes along the road in the detached section of the Monument. This month's work completed the road slope project.

An additional 450 feet of sewer line was completed this month. This installation completes the sewer line project and connects the residence area development with the sewer disposal system.

The 10,000 water storage tank with all connections was completed and now ready for use. Additional water consumption by the Army of late has hindered filling the tank to capacity. However, after removal of the camp this storage tank will prove valuable in keeping an ample storage of water for Headquarters and Residence Areas.

Additional signs for this and other monuments have been completed and shipped this month.

Construction of the Museum has been stopped all month awaiting the arrival of lighting and ventilation plans.

A small quarry crew has been in operation during the month quarrying and shaping building rock as needed for the Quarters project.

Our Forestry Foreman, Fulton, has been detailed to the Chiricahua camp since March 17 for a period of six weeks to assist in planting and forestry work on that monument.

****

BANDELIER FORESTRY

By J. Fulton, Forestry Foreman

The first week in March my crew completed work on the vigas and lintels for Quarters No. 1 and for the museum. The lintels contained a total of 1900 Bd.Ft.; 1045 lineal feet of vigas were cut and finished.

On March 9 and 10 I was engaged in some bark beetle control work. A 57' Pinus ponderosa, 28" in diameter, which was infested with Dendroctonus barberi, was cut near the hotel. Also, it was necessary to cut 28 landscape-planted trees in the camp ground and parking plaza. Four were Pinus edulis, twenty-three were Juniperus monosperma, and one was a Pinus ponderosa. All these trees were simply piled and burned.

The next four work days, I had a crew on digging the ditch for telephone and power conduit between the residences, utility yard, and the office.

On March 17 I left Bandelier to go to Chiricahua National Monument. I expect to be here until about April 15 on a tree-planting project. Al-

though the growing season will soon begin, I believe we will be able to get the job done in time. The planting is going along fine at this time.

****

CHIRICAHUA

By Wm. Stevenson, Project Sup't.

I herewith submit the following travel report for the month of March.

Due to the increase in travel during February, three enrollees were assigned as guides this month; also signs were made up to direct tourists to the points of interest.

During the month 350 visitors arrived in 80 cars representing 14 states. Travel did not increase as rapidly in March as would have been expected, but cold weather accompanied by flurries of snow the latter part of the month kept many of the local people away.

****

CHIRICAHUA ECW

By Wm. Stevenson, Project Superintendent.

I herewith submit the following report for the month of March.

Work continued throughout the month on the Massai Point. Balanced rock trail 1000' have been completed to date. Echo trail advanced 250' this month. The heaviest construction is now done on this trail.

Six hundred square yards of bank were sloped on the Bonita Highway; most of the material was used in the obliteration of borrow pits.

The approach road to Sugar Loaf trail was widened at its junction with Bonita Highway to permit greater visibility.

The Ranger Station at Headquarters Area is 100% complete. The Camp Ground Bathhouse is 100% complete.

Three fireplace and table sets were constructed at Massai Point and one pit toilet was moved to Massai Point from the headquarters area.

Forestry Foreman Fulton arrived from Bandelier March 18 and work was started immediately on the planting project.

Andy Clark and Carl Schmidt arrived March 9 to complete the Topography map on the Monument.

Visitors for the month include R. R. Robinson, Master Mechanic of Yellowstone National Park, A. T. Bicknell, Ranger, Casa Grande National Monument, and A. E. Borell, ECW Wildlife Technician.

TONTO

By Woodrow Spires, In Charge

This draws to a close the busiest month I have so far encountered. Lots of visitors and plenty of new plants and flowers to identify. It is quite surprising the botanical knowledge that some of the visitors possess.

You will probably think by my weather reports I am in training for a California real estate salesman this winter. This month we have had 2.39 inches of precipitation which fell in the form of snow, sleet or rain and six cloudy and four party cloudy days. I was unable to read the figures, but guessing would say 32 degrees for the minimum and 75 degrees for the maximum.

Visitor count for this month shows an increase of 92 visitors, or 12.7% over last month. This I account for by fewer cloudy and disagreeable days. The following figures are derived from SWM Stencil No. 16:

Total visitors at the Monument	816
Total time guiding	7250 Minutes
Total visitors taking field or ruin trips	444
Total number of field or ruins trips	93
Total time field or ruins trips	5100 Minutes
Average time field or ruins trips	61.2 Minutes
Average groups field or ruins trips	4.7 Prs.
Total visitors Museum trips	454
Total Museum trips	93
Total time Museum trips	1550 Minutes
Average time Museum trips	16.6 "
Average group Museum trips	4.8

Special trips to the upper ruin were so few that I counted them as regular field and ruins trips.

Checking last year's travel count for the same period (Feb. 25 to March 25), I find 749 persons visited the Monument against 816 for the same period this year. This is an increase of 67 persons, or 8.2%.

This month's supply of newsworthy visitors took quite a setback as compared to last month's.

Steen returned to headquarters February 29. Engineering crew left March 5. March 7 Raymond Higgins, N. P. S., Oklahoma City, accompanied by his mother, stopped in for a brief visit of their first Cliff Dwelling. March 20 Mr. Norce Gladwin and Miss Emily Cross of Gila Pueblo were interested visitors.

I believe I had the prize visitor for this month. March 9, a big 12-cylinder Cadillac drove up and a woman got out and walked down to

the Museum and requested a trip and proceeded up the trail. After some 20 minutes of puffing and panting intermingled with four or five rests, she was within 12 feet of the entrance to the ruins. Looking up she said, "Oh, this is the ruins"? Then turned around and started back down.

Tomorrow the W. P. A. crew should be here to begin work on the new latrines. This morning we had about two hours of snow which melted as fast as it fell. About two more storms like the last two and the entrance road will be impassable.

I could use the blotters for the botanical press to full advantage now as there are a great many flowers in bloom.

Yesterday I received one of the finest cakes you ever read about in a package addressed to "Custodian, Tonto National Monument, Roosevelt, New Mexico. There was no name in the package, only an address which I have so far been unable to find in the register. Anyway I accepted the cake.

About the only advantage, I can see, of being in the cabin while it is raining, is that it retards the force of the falling drops. It might save a person from being beaten to death by a hard rain but he would drown so what is the difference. It is starting to rain again so I will close so as to be able to apply myself in finding a dry spot.

****

CHACO CANYON

By T. C. Miller, Custodian

General:

March has lived up to its name this time, with very little precipitation and plenty of high winds. The road to the south has been fa fairly good this month, while the road to the north has been tough because of the blow sand. Many cars and trucks have been sticking in the sand north of Escavada Wash.

The travel has been fair but uncertain all the month. It is hard to realize that winter has gone and spring is here. The grass and weeds are starting to grow, the Prairie dogs are out, barking again. There is quite a large variety of birds in the canyon now. Ranger conditions are about average.

Weather Statistics:

Maximum temperature 62 on the 13th; minimum temperature 15 on the 11th. Precipitation .09 inch rain and melted snow was recorded for the month. Greatest precipitation in 24 hours was .07 inch on the 22nd.

Travel:

453 people entered the Monument in 162 automobiles, coming from the following states: Arizona, California, Colorado, Minnesota, Michigan, Ohio, New York, New Mexico, Oklahoma, Texas, and Washington.

Museum and guide service was furnished to 70 people in 16 parties. 1,566 minutes were devoted to the visitors. Six of the major ruins of the Monument were visited by our visitors during the month. The farthest ruin from headquarters that was visited by car was 11 miles east by road.

Special Visitors:

John G. Frost, U.S.G.S., and Clifford Carr, Farmington, with Ranger Hart, Aztec Ruins, visited the Monument on the 11th.

Bert Coddington, Agronomist, L. V. Compton, Biologist, Soil Conservation Service, and Adrey Borell, Wildlife Technician, National Park Service, arrived on the 12th to study the rodent control problem here in the Canyon. Mr. Coddington and Mr. Borell departed on the 13th. Mr. Compton stayed over until the 15th in order to look the project over more thoroughly, this being his first trip here. They agreed to poison rodents within 100 yards of any dam site in the canyon.

Superintendent Pinkley, Acting Assistant Superintendent Hugh Miller, Headquarters, Superintendent Nusbaum, Sam Ahkeah, Mesa Verde National Park, and Custodian Faris, Aztec Ruins, arrived on the 16th. Superintendent Nusbaum, Custodian Faris and Mr. Ahkeah departed the same day. Mr. Pinkley and Mr. Miller departed the morning of the 17th.

Drs. Hewett and Fisher, School of American Research, arrived on the 20th and departed on the 21st. They informed us that they plan to start construction on their headquarters building, south of Chaco Wash and near the Gap, within ten days.

Improvements:

One man was used ten 8-hour days during the month, painting tops of steel posts, building new water gaps and maintaining fence.

****

YUCCA HOUSE

By T. C. Miller

I inspected Yucca House and Hovenweep on the 20th and returned to Chaco on the morning of the 21st.

Nothing unusual to report on those monuments this trip other than the roads were good. The ruins show no evidence of recent vandalism.

The country in general around those monuments is in better condition for spring range than it is around Chaco.

****

MONTEZUMA CASTLE

By Martin L. Jackson, Custodian

Am happy to report a very interesting month at this monument. While we are off in number of visitors, the ones we have had proved to be very interested. The total number for the month were 590, of which 279 climbed the ladders.

Highway 79 is still under construction between Jerome and Prescott. Is closed from ten in the forenoon until five in the afternoon, every day and some days is closed all day. Our mail comes in on stage from Prescott by way of Highway 79. Several days during the past month we did not get any mail---the stage being unable to get through. For the last week the weather has been stormy, which naturally cuts down on the number coming in. On Sunday, the 22nd, it rained all day and is one of the few days since I have been here that we did not have a visitor. However, we are all thankful for the storm. We had been getting in on the tail end of some of these Kansas, Texas and Los Angeles dust storms. The air is much better since the storm.

While I question the monthly report being the place to air out our ideas concerning the day off each week, I can't resist saying a word or two since last month's report cam out, where, it seems, an issue is being made of same. I can remember the good old days when we did not get a day off each week. But things have made a decided change since that time. We were not having so many visitors to take care of at that time, so many reports to make out, or so much statistical data for the education of the Educational Department. Personally I think Dale King was absolutely right in his contention that one should have one day off duty each week, and that it makes for a better service. And since Congress has seen fit to give it to us, I for one am in favor of taking it. I still maintain that if a man is on the job for six days and does anything while he is on the job that he is entitled to a day to do as he sees fit. I think you if this gets by.

****

WALNUT CANYON

By Charlie Steen, Park Ranger

While waiting for a snow plow to come free us, I will make my contribution to this month's Walnut Canyon report.

Travel for the month was 360 - an average of about six cars a day entered the monument until the 21st. Since Saturday not a single car, with one exception, has been in. The exception was the car of Don and Marie Erskine who have twice bucked mud and snowdrifts in

order to get home. The second time, however, they needed a span of houses.

The Dodge pickup is half a mile off the monument on the east entrance road bogged down in a mud hole and I hope to be able to persuade the snowplow crew to pull it out. I am pretty sure they will pull the car out for it is right in the middle of the road and the plough will be unable to get around it otherwise.

To go back to the beginning, I left Casa Grande National Monument on the morning of the second and arrived at Walnut Canyon that evening. The first visitors during my stay arrived next morning just as I was getting ready to go to the canyon and take a look out the trail. I had never been around the island, and I am afraid those poor ladies didn't get a whole lot out of the trip. They went as far as the last flight of steps on the trail and apparently didn't quite believe or trust me when I told them that, "Surely the dwellings must be just below us," At any rate, they turned back and I had to make a special scouting trip around the trail to find out where things were.

Walnut Canyon is apparently the favorit picnicking spot for the people of Flagstaff, and during my stay here I have had some slight difficulty with college students wishing to leave their names on walls and with drunks, whose delight is to throw bottles and rocks down the trail. No serious disturbance took place.

Spent a day at Wupatki with the Brewers and enjoyed their hospitality and a trip around the old stamping grounds. Wupatki, as you know, was my introduction to Arizona and the Park Service. At Citadel I recalled a certain sheep chasing incident in which Dale King took a prominent part.

Saturday night I went to Chimopovi to witness a Katchina dance for the. The dance didn't get under way until eleven and I decided to camp on the second mesa that night and get up early in the morning. The fly in the ointment was that early in the morning the snow started to fall, and I had a devil of a time getting back to the monument, and that also explains why the Dodge is or stuck out on the east entrance road.

Tried to band some birds but caught nothing but Pigmy Nuthatch repeats. One Red-backed Junco had the nerve to enter a trap, but I didn't recognize him and had to release him. I also spent five minutes watching a pair of Long-crested Jays make up their minds that a government sparrow trap was not fit place for a self-respecting jay to be seen in.

On the twentieth I recorded three pairs of Northern Violet Green Swallows and one pair of White-throated Swifts in the canyon just below Observation Point.

By J. D. Erskine, Park Ranger

Inasmuch as my time at Walnut this month was only a matter of four days, I hardly feel that I have much to add to Charlie's report. It seems that I was rather unlucky, as the weather just started to clear up during the end of February, and the day before I left was the first day that the roads were passable without chains. Now, Charlie tells me that the weather was ideal, warm, and sunny all during his stay until last Saturday night when it started to storm appropriately for my return to Walnut.

Incidentally, this storm from which the H.R.W.P., Charlie and myself are just recovering was the most severe this winter. Along with the six inches of snow there was a terrific wind and bitter cold, resulting in drifts as deep as three feet, with most of the drifts in the middle of the West Entrance Road.

As I look over the registration sheets I note that by far the greatest number of visitors were from out of state, apparently tourists. Arizona contributed the greatest number from one state, naturally, with a count of 110. California followed with 42, Illinois 24, New Jersey 16, and the balance being divided quite evenly with 29 other states and Ontario, Canada, being represented. The only Park Service visitor was Ranger Frank Fish from Montezuma Castle National Monument who stopped for his first visit to this Monument. Charlie has already given the total travel as 360. Contacts were made with 245 of these visitors.

In concluding this report I must request that someone from Headquarters write to the weather man to see if something can be done about this weather. I sincerely hope that neither my wife or I will have to again go through a four-days as tough as the past four. Briefly summarized our troubles were: first my wife in our Chevie slid off the road into the ditch in the mud 25 miles this side of Pipe Spring, and I pulled her out with 1800. Then I had the misfortune to be unable to stop upon meeting a snowplow on a blind curve near Jacob Lake in the Kaibab Forest, and turned 1800 over an embankment to save hitting the plow or my wife in our car.

Then after getting to Walnut in our Chevie we started out to get Jimmie Brewer to help bring back 1800. On the way out of Walnut Canyon we went in the ditch, but the Chevie managed to pull itself out after much fussing. Then while towing 1800 the 176 miles back to Flagstaff, my Chevie had two flat tires from stone bruises.

Then we stuck head-on in a snowdrift trying to plow our way into Walnut on the West Road, and had to walk over a mile through drifts over our knees in the face of a bitter cold wind and driving snow to get to a farm house to get help and to get warm in the case of my wife. With the help of a team of horses that towed us over a mile we managed

to get into the Ranger Station.

Then today Charlie and I had no luck at all trying to get the Dodge out of its mud hole with my Chevie. We couldn't even budge it, so believe the frame is frozen solid to the road. Perhaps the snow-plow tomorrow will have better luck. When all our trouble is over we will be able to look back and laugh, but I surely hope we are nearing the end of it now. The H.R.W.P. is surely being initiated quite violently into the life here in the Southwest.

Now I'll close hoping that next month will see the March "lion" dead and buried.

****

SAGUARO

By Paul Beaubien, Ranger

766 visitors reached the ranger station this month, but only 606 are listed as educational contacts. I believe 2,000 visited the monument. A higher percentage came the four miles to the Ranger Station this month than last because of improved signs.

This makes the fourth time of watching a register when I thought I would have all states represented. But after the final check-up, 12 states were not present. New Mexico and Nevada were among the missing while a third neighboring state, Utah, was only claimed by one visitor. The first twelve states, listed in the order of frequency with which they were represented, are: Arizona, Illinois, New York, Ohio, California, Michigan, Wisconsin, Iowa, Pennsylvania, Minnesota, Indiana, and Nebraska. Evidently, Saguaro National Monument attracts the mid-westerner.

Cold, damp weather slowed traffic for the last week but a few hardy individuals came every day. In the warmest weather, some visitors drive up still trying to find the barren sandhills of the desert they expected. It gives me an opportunity to tell how the plants have adapted themselves to their environment. But it is difficult to arouse enthusiasm about desert plants in a rain.

The eggs of the two Curved-bill Thrasher nests, mentioned in last month's report, have hatched and the young have already left the nests. With snow on the Tanque Verdes twice in the last week, I suppose the youngsters think they are in a cruel world.

A few deer have been seen (different days) by three parties of visitors. Also, a rattlesnake was seen on the 14th.

In the January report, I wrote of keeping a list of questions asked by visitors. Later, I decided the list was an index of my inefficiency as a ranger and destroyed it before the Boss found how much

I hadn't told the visitors. In regard to the sensible questions, I try to beat the visitor to the punch, while the "dumb" questions are not important. Speaking of "dumb" questions, I don't think it makes any difference to most visitors how I get my boots off at night even if they can't see the ends of the laces. However, keeping a question list at a monument where a museum is planned, might prove worth while.

Dr. Ira L. Wiggins of Stanford University, while preparing for a trip to Mexico with Drs. Shreve and Mallery of the Carnegie Desert Laboratory, took time to spend half a day here to give me the benefit of his knowledge of desert plants. Maybe Bob Rose should insert another column in his educational contact stencil to provide for those instances when a ranger receives instead of gives.

****

PIPE SPRING

By Leonard Heaton, Acting Custodian

The monthly report will be in the most part that of Ranger Don Erskine, who arrived here March 1 to take my place while I was detailed to guide service at Casa Grande Ruins for three weeks. So I will let Don speak for himself as to how he got along with the Monument and Fort the past 22 days.

The week from February 26 to March 1 was not very busy in travel, and I spent most of the time cleaning up and getting things in shape so that Don could handle the irrigation and other necessary things that needed doing to keep the monument going.

I am very pleased with what has been done here while away and think Don a very capable ranger who will be a good fellow to have in our Southwestern Monuments.

I want to say that I was very much satisfied with the chance to make the change to learn the methods of another monument and there come to know the weaknesses and strong points of my own. Also to give me more determination to improve. I appreciate the privilege of meeting and shaking hands with the bunch at Casa Grande---a grand lot they are. My only regret is that I can't meet them more often.

Attached is the contact report for the month as given by Don. Will let Don take the floor now.

***

By J. D. Erskine, Park Ranger

The report for Pipe Springs from March 2 through March 21 follows:

My stay at this monument in the land of cowboys and wild horses has been most enjoyable and I have learned a great deal. Travel to the monument in the way of tourists has been almost nil, and the two

cars from states other than Arizona and Utah (local people) came only unexpectedly on their part. One came from Oregon and the other from Illinois. The Illinois party ended up in giving a show at the CCC Camp and then staying all night in their house car on the Monument. All the rest of the travel has been either local stockmen or CCC boys. Forty-one persons signed the register during my stay, but as some of them were CCC boys who just wanted to sign something and didn't stay long enough to learn anything about the Fort, I haven't included them in my contact report. I gave conducted trips through the Fort to 29 persons. I can only estimate the total number of persons who passed through on the road or stopped for water. I believe my figure of 119 is fairly accurate.

Many stockmen are hauling all their water from Pipe Spring, and many days there are several trucks lined up waiting to fill their drums.

On Wednesday, March 11, I was honored with a visit by Landscapers Langley and Keeling. They spent several hours going over Park projects with me and had lunch as my guests at the CCC Camp. Also on Friday, the 13th, Park Naturalist Presnell of Zion National Park stopped for a few minutes as he passed through.

The weather has been practically ideal in the sense that it has been clear every day that I have been here with the exception of a trace of rain on one day, and last night it rained hard all night, and turned to snow toward morning. Roads this morning are very treacerous. The temperature has been moderate with an estimated minimum of about 32 degrees and a maximum of about 80.

The ECW projects on the Monument are all completed as far as they can be without money being appropriated for supplies and the use of a truck for hauling gravel. The fencing of the Monument is complete, as is the diversion ditch. Most of the leveling of the Parking Area is completed, but nothing further can be done with a truck for hauling gravel which is also the case with the camp ground road. The walk construction is complete as far as it can be until something definite is done toward the development of the old Whitmore-McIntyre dugout, which is in the line of one of the walks.

Most of my time has been spent irrigating the trees that were planted last fall. About 35 of the trees are so located that water will not run to them, so I have had to haul it in a drum in the truck and syphon it out to each tree. That has taken considerable time, and a pipe line of some sort is badly needed to assure those 35 trees of getting an adequate supply of water.

With the arrival of the new bird traps from Berkeley, I think that this should become an excellent bird banding station, as the water supply makes this a natural place for birds to congregate and also it is a

stopping place for birds in their migrations. During the last week especially I have noted quite an increase in the number of birds. Probably this increase is due to migrants. I have tried to identify as many as possible, but am sadly at a loss for some of them. However, those that I have identified are as follows: English Sparrow, Gambel Sparrow (both adult and Immature), House Finch, Western Rober, White-rumped Shrike, Meadowlark, Red-shafted Flicker, Hammond Flycatcher, White-throated Swift, Killdeer, and Western Crow.

The only change I engineered in the Monument during my stay was the destruction of the very unsanitary and old men's rest room. With the help of two CCC boys I removed it and obliterated all trace of it, and then by building a partition through the Women's Rest Room a double ended building resulted which will solve the problem for a Men's and Women's Rest Room in the same building. While this will serve for now, an improved rest room of some type will be needed before Pipe Spring will be able to offer rest room accommodations up to Park Service standards.

After a most interesting three weeks during which I made trips to Zion National Park, and Toroweep in Grand Canyon National Monument, I turn the Pipe Spring National Monument back to Leonard Heaton.

****

AZTEC RUINS

By Johnwill Faris, Custodian

The best March in the history of the Monument, since I have been custodian---with 602 visitors. This is over double last March.

Weather conditions as a whole have been good and the passes open most of the month. This may account for a number of them, and then, too, I think that travel is picking up a little early this year. Both Mr. Hart and myself have noticed that several parties are out-of-state cars, and many from distant points.

The CCC boys have been quite interested and several parties this month have consisted of these boys. We are especially glad to show them through, and feel that it gives them a little more pride in the work they are doing, to see what it is all about. Mr. Hart has taken all of the 52 who are working here at the present time, and the boys seem to enjoy the explanations given. We are using a chart worked up by one of our CCC boys in our museum now, and I think that they feel a little proud that hundreds of visitors see work they are doing, and the work they can do.

March broke another record, and one that we are not so proud of. This month marks the first accident of any nature to a visitor in the six years I have been here. On one of the trips this month, a lady fell in descending the Great Kiva and broke her leg. She is getting

along very nicely and I want to go on record and state that I never saw more self-control than was displayed by Mrs. Segerberg. She lives in Durango, and was taken home soon after preliminary treatment was given by the local Doctor. It has been my pleasure to have visited her several times in the hospital, and she is more cheerful and radiant even with her injury than many of us are from day to day. While we regret the mishap the worst way, and trust that such may never occur again, the visit or two that it brought about, has made us acquainted with some mighty fine people that we might have never known had it not occurred.

We were visited by several folks from the inside this month. Of course, the visit you and Hugh Miller made us tops the list, and we wish that you would repeat. One thing I can promise, Boss, Hugh will be surprised at a thing or two the next time he drops in. We profited materially by your visit and know that we would if you were to come back every week in the year.

Most of our other visits were from the ECW men. Both Mr. Ahrens and Mr. Cully of the Denver Office and Oklahoma City branch were in a few days ago. Mr. Teyssier, Camp Superintendent, has been down several times, and, last but not least, Mr. Wirt of our own ECW work. Mr. Wirt was in for a few hours yesterday and expressed himself very favorably concerning the work that the boys have been doing. You saw for yourself, Boss, that the boys have been doing a mighty nice piece of work for us, and it is going to be rounded off in a very creditable manner. This week is stormy and two days have been idle on account of storm, but with reasonable good weather for the balance of the month, we hope to finish every project that we have started.

Jesse Nusbaum from Mesa Verde was in for a few minutes a week or so ago. It was my pleasure to accompany him to Chaco and I enjoyed it very very much. In the six years that I have been at Aztec this is the first time that I have been with Mr. Nusbaum for over a few minutes at a time. Now that I have a taste of what it is like I hope that the opportunity to do so again comes real often.

Mr. Earl Morris, our old standby, contributed again this month with one of the most important gifts we have ever received. He sent us a copy of his work notes, and in them are listed every artifact that he has taken from this Ruin with the room number and piece number of each item. From these notes it is possible for us to identify every article on display as well as the many many pieces that we have in storage. Many features that we have not been certain of, we can now locate and determine exactly just what and why it is classified. We can never reciprocate for what Mr. Morris has already done for us and now with this latest contribution, we simply mark it down as a life's task and proceed the best we can.

Things are working into shape, Boss, for a very pleasant season, and we are certainly proud of the Monument we have to offer this summer. We are laying plans now for the month following and before it is too far gone we hope to have under way plans for finishing our parking area, plans for the installation of our museum developments as they are being set up in Berkeley. It is very probable that we will even give our office over to the museum people, and with a little alteration that we are hoping to get, we will have as neat a museum set-up as one could hope to see.

So, Boss, with the CCC still going strong to finish up all our projects, the plans that we have outlined for the Month of April, I think that I had better keep in step and bid adieu to March, one of the best months in our lifetime.

****

WUPATKI

By James W. Brewer, In Charge

500 Use of Monument Facilities by Public

Sixty-one guests registered at Wupatki Pueblo; 53 at the Citadel Group; 10 names are duplicated, leaving a total of 104 registered visitors to this Monument in March 1936; in 1935, 33; in 1934; 17.

Largest single day was Sunday, the 8th, on which 15 visitors registered

Of the 18 parties to the Pueblo this month 17 were contacted.

States were represented as follows: Arizona, 6; New Jersey, 4; Washington, Oregon, California, Illinois, 3; New York and Wisconsin, 2; West Virginia, Pennsylvania, Connecticutt, Florida, New Mexico, Texas, and Rhode Island, 1. Foreign travel consisted of one party each from British Columbia and Australia.

530 Newsworthy Visitors

DR. and Mrs. Colton and Katherine Bartlett brought Dr. and Mr. W. J. Dakin out on the 4th. Dr. Dakin is a Marine Biologist with the University of Sidney, Australia, (if you followed the accounts of the Australian "shark murder" you will remember Dr. Dakin's statement regarding the slow digestive organs of a shark).

N.F.S. visitors: Mr. and Mrs. E. H. Oldham on the 7th. (Ed and I talked over the possibilities of installing a cattle guard in the forest fence on our west boundary, the Forest Service to provide materila, Park Service labor. Ed also suggested the possibility of running a phone line to the Forest Service ranger house a quarter mile west of the Pueblo, employing the top fence wire.

N.P.S. visitors: Ranger Charlie Steen on the 16th. On his day off Charlie showed me some things I did not know about the Citadel surroundings---the mailman who takes a walk on Sunday! Custodian and Mrs. Erskine dropped in on the 23rd to invite us to Jacob's Lake the following day.

020 Weather

February 25 to March 1: High 35 degrees; low 26 degrees; precipitation none. March 1 to 25: high 71 degrees, on the 3rd, 13th, 14th, and 17th; low 24 degrees, on the 23rd. Total precipitation. 24 of an inch--trace of rain on the 22nd and snow on the 25th. On the morning of the 25th everything within sight was white for the first time this winter. There were 19 sunny days, 4 part cloudy, and 6 cloudy days. From the 7th to 17th, inclusive, we had 11 consecutive sunny days with some wind.

100 Administrative

180 PUBLICITY

Science News Letter (February 15) carried an account of "Hopi Spinach" growing on the Monument published last year in this Report.

Arizona Highways (February) ran an article concerning ball courts, mentioning Wupatki and showing photos of our court and of Wukoki (whether in or out of our boundary, we have taken Wukoki into our hearts).

200 Maintenance, Improvements, New Construction

230 NEW CONSTRUCTION

Trail between Rooms 36 and 16 was filled to a suitable uniform level and width and landscaped with fallen wall material.

400 Flora, Fauna, Natural History

FLORA

A list of pressed plant specimens has been returned identified in part. Some were not identified because I had not taken the specimens at the precisely correct time. In the cases of incomplete identification I will collect another specimen. In this I will be guided and greatly aided by the thoughtful notes added to the list, such as "too young."

430 ARCHAEOLOGY, HISTORY

From partially excavated Room 7 a larger than average, much broken pot washed out. I collected the pieces and put them together on

a slack Sunday afternoon. The olla is of coarse paste, rough smudged exterior; the interesting feature is a row of 3/4-inch coiled rosettes just below the neck.

Of historical interest is the fact that a "mining" party did some work in the long-abandoned Doney Mine; this mine was dug by Ben Doney in his search for old padre-buried treasure. The recent searchers, after hauling a load of second-hand lumber to the shaft and spending two or three days replacing some of the old timbers, abandoned the work.

460 BIRDS

On the 9th three V's of unidentified ducks or geese flew north, west of the Pueblo.

The Mountain Bluebirds observed so often in February were seen only twice this month--on the 3rd and 15th.

Newcomers are: Western Mockingbird (12th); Cedar Waxwing (20th); Brewer Sparrow (20th).

On the evening of the 12th Sallie, Clyde, and I went to Doney Crater to see the mine improvements. Upon our arrival an eagle left is nest above the mine shaft. Clyde and I climbed to the top and observed two eggs in the nest. Last month I reported Clyde as saying the young eagles were then in the nest; this must have been an error either in Clyde's moon count or in my interpretation of his statement.

BIRD BANDING ACTIVITY: Believing water to be our best bird bait I have installed the following: To a discarded gas drum painted green and daubed brown I soldered at the bottom a shut-off valve and short length of copper tubing. With landscape consideration I concealed this in a juniper tree, with the tube directly over a natural basin in the sandstone. After filling the barrel (the rotary hand pump again) I allowed it to drip several days before placing a homemade beginner's trap over the water. The trap I made of $\frac{1}{2}$" mesh wire; it looked as though it might injure a frightened fluttering bird so I lined the three vertical sides with cardboard. Contrary to expectation the card board has not retarded the capture of birds. In about two hours' time I banded 15 Solitaires and one Cedar Waxwing. A second station of the same construction has been installed and is still in its "invitation stage."

470 ANIMALS

After leaving the Pueblo on the 20th Mr. J. R. Terhune wrote: "Saw a coyote and two antelope near our "road" through the cinders. Not such bad going. Enjoyed Sunset Crater."

A larger than usual number of scorpions has been captured by the Honorary-in-charge-without-pay. The largest speciment as taken on the 16th, under the In-charge's bedroom slippers; it measures five and ¼ inches from end of claw to stinger on tail; the speciment was drowned in alcohol and is now in a homemade mount. We would be very interested in learning more about these very close neighbors; if there is an entomologist who would like to specialize in scorpions we will furnish him with a fine series of preserved specimens.

GENERAL

NAVAJO ARTS AND CRAFTS EXHIBIT

May I take this opportunity to thank your office for the speedy cooperation in getting the memo books mimeographed and to us so promptly. It is a great help in keeping things organized since already six articles have been brought in for exhibit. A rug came in from near Grand Falls; I did not know we would draw them from such a distance. Peter Peshlacai has made and deposited with us four miniature saddles depicting the evolution of the saddle. Also by Peter--a model hogan and miniature figure weaving.

SUNSET CRATER

We bucked into the Sunset Crater road and shoveled out without getting the figures. Phoned Walnut Canyon upon our arrival in town and learned they are all snowed in. I contacted Jim Walkup to plow the road. Charlie says the chuck is holding out o.k. so guess they are all right. Seems to me Don and Marie have earned a rest.

****

CAPULIN MOUNTAIN

By Homer J. Farr, Custodian

Travel has maintained a fair flow during the month despite the condition of the road and trails. Between four and five hundred visitors during March came. It appears that a wide variety of visitors has called on us this month. We have had a number of visitors from Georgia, Mississippi, and Tennessee. Since better cars and better highways, folks are visiting more during the winter than before.

Weather has been very fine all during this month---only a few days of heavy wind and all the old-timers here predict a return to normal of the spring snows for April. Here's hoping!

Wildlife in the Monument remains about the same as usual. I notice this spring we have about six or seven deer, entirely too many porcupines and the usual amount of Cocktail (Cotton tail) rabbits. Have numerous requests this spring for photos of the Monument and am sending what I can.

CANYON DE CHELLY

By Robert R. Budlong, Custodian

Twenty-five persons visited this National Monument during the month of March, 1936. Twenty of these were bona fide visitors; the remaining five were here on trips of inspection of the Custodian's Residence. The twenty bona fide visitors made four trips, totalling 660 minutes, averaging 165 minutes per group. There were three trips to the rim and one trip down the White House Trail. During the month of March, 1935, there were no visitors.

Weather has been mild most of the month. Roads have been rough, but passable, most of the time. As I write this report it is snowing, but it can not last very long.

Maximum temperature for the month, 70 degrees, on the 18th; minimum, 14 degrees, on the 11th. Precipitation, .35 inch; greatest range of temperature in 24 hours, 53 degrees, on the 20th. We have had some high winds and several days of heavy haze, presumably from some southern dust storm. The canyons have been impassable the entire month. Warm weather has resulted in rapid melting of the snow and ice, and after the first few warm days, the roar of the water in the canyons could be heard for a considerable distance.

Two official inspection trips of the Custodian's Residence were made during the month: Acting Assistant Superintendent Miller from Headquarters and Mr. Kenneth Saunders of Mesa Verde National Park were here February 27 and 28. Mr. Saunders was accompanied by his wife and Mr. and Mrs. Eames and daughter Consuelo. Superintendent Pinkley and Acting Assistant Superintendent Miller were here on another inspection trip March 13, departing (as usual) the same day.

Two lines of drainage trench were run around the Custodian's Residence during the month, to prevent damage by water. The house is built in an excavation several feet in depth, at the base of a hill. Considerable grading will have to be done in the future, but the trenches protect the house from drainage from the hill in the meantime.

At present I am working on the water reservoir---removing forms, waterproofing, etc. Considerable work remains to be done on both water and sewer systems, before the house can be occupied.

Two trips were made by the custodian during the month, with an official of the Indian Service, to other points on the Navajo Reservation. Mileage was clocked, photographs taken of some of the more picturesque scenery, etc. These were one-day trips, the object being to familiarize myself with the roads and country nearby, since many of our visitors wish to take side-trips on the reservation, and often ask detailed questions concerning roads, scenery, points of interest, etc.

Generally speaking, March has been a quiet month. It is expected that April will see the start of the tourist season at this National Monument.

****

TUMACACORI

By Louis R. Caywood, Jr. Park Naturalist

Custodian George Boundey and family left here Monday, March 16, for Gran Quivira National Monument, and I arrived on the 17th on relief duty. Consequently, my remarks for this month will be short.

The weather was warm and fair and very conducive to travel through the 20th of March. However, from that date on, we have had lots of rain, high winds and the thermometer has dropped several degrees. The surrounding mountains show quite a lot of snow. Visitor registration has dropped noticeably in the last few days due to this change in weather.

The total number of visitors to the monument for the period of February 26th to March 25th, was 1573. Of this number, 1452 were conducted through on guided trips. The total registration for March, 1935, shows 1837.

Noteworthy visitors to the Mission were - Miss Florence M. Warner, Federal Relief Administrator for the State, on March 6th, Dr. Ira C. Bartle of San Luis Obispo, California, noted authority on fungi and spores, who explored the ruins of the Mission for deathless germs, on March 14th. In an article which appeared in the Tucson Star, March 24, Dr. Bartle said that the spores, buried for more than two centuries in adobe walls of the old mission, may be resurrected by modern science and examined under the microscope. He found evidence that the organisms have been in a state of suspended animation and would resume normal life when placed in favorable conditions.

Sunday, March 15, six pupils of the Art Class, University of Arizona, spent the day at Tumacacori making drawings of the Mission. Ranger and Mrs. Martin Evenstad were honored with an unexpected visit March 14, 15 and 16 from Ethel Evenstad's sister and brother-in-law, Mr. and Mrs. John A. Stormon and their two sons. Mr. Stormon is Secretary of the International Peace Garden, Rolla, North Dakota.

On March 17, Mr. Bicknell and Mr. Robinson, both of the National Park Service, were Monument visitors. Mr. Mahroni Young, designer and sculptor of the Kino Memorial, which was dedicated in Tucson, Sunday, March 15, was an interested visitor to the Mission on March 20.

Bird Banding promises to prove very interesting at this monument. During the short time that the traps were set the following birds were banded: 2 Canyon Towhees, 4 Greentail Towhees, 1 Cactus Wren, 1 Bandire Thrasher and 1 Arizona Cardinal. I hope to have a great many more to show for April.

WHITE SANDS

By Tom Charles, Custodian

There was an interesting group of visitors at the White Sands this month. Leo McClatchy of Oklahoma City, a prominent newspaper man of the Pacific Coast for many years, now publicity man for a department of the National Park Service, was with the party which had the fatal accident at Deming. On his way home he spent a couple of days at the White Sands and took some 15 or 20 pictures to try out on the Rotogravure Sections. M. C. Huppock, Assistant Director of the Park Service Recreational Demonstration group was here for a day or two in the interest of the monument. Bill Wirt, regional forester, visited the monument and his friends Mr. and Mrs. Adrey Borell, who were camped at the White Sands.

Edith M. Patch, from the University of Maine, with three consultants, spent a few days at the Sands in preparation for a text book, entitled "Our Desert Neighbors," to be published by the McMillen Publishing Co. It seems queer to me that out of all the interesting insect and animal life at the Great White Sands, Miss Patch should select an inconspicuous white spider as the White Sands' contribution to the story. M. L. Ormsby, Chief Clerk of the New Mexico Highway Department, visited the monument and asked for enough sand to supply the sand tables at the State School for the Deaf at Santa Fe; Mrs. Clyde Tingley, wife of Governor Tingley of New Mexico made her first visit to the Sands on Wednesday, March 11. She rode over the hills in both an automobile and on the surf board and declared the, "thrilling."

Officials of the Continental Oil Company were here to make arrangements for a White Sands exhibit in their new building at the Texas Centennial, Dallas. Henry E. Riggs, dean emeritus of the School of Engineering at Ann Arbor, with a party of six visited us one day to take a final look.

Oza K. Ataullah of Herat, Afghamistan, wrote in the registration book, "A dream in white splendour; I have seen nothing like it in the world."

Phillip Blossom, assistant curator of the University Museum at Ann Arbor, spent 10 days in the vicinity of the White Sands. Mr. Blossom is an assistant to Dr. Dice who named our famous white mouse "Apache Gypsi." Our investigation leads us to believe that he would have been justified in naming him "Geronimo Gypsi." Apparently he is the wily warrior of the tribe. His feet are small, his leg muscles large and powerful. He shovels sand with all four feet in action; one lone mouse can move 400 pounds of sand in a single night. It is claimed that he has no family ties---male and female fight to death if confined together. Except for a few hours or a few days in the mating season he has no friends. He is the lone wolf of the Great White Sands.

Local geologists and other students of the Sands are greatly interested in Vincent Vandiver's geological report of the Sand's origin. It is probably the most exhaustive report ever made on the White Sands and seems to SATISFY with the possible exception of one question, "Why here and no place else in the world?"

An event in the White Sands office this month was when Adrey Borell brought his mounted specimens of birds and animals ready for the museum cases. Mr. Borell left on March 22 after spending several weeks at the Sands, studying the wildlife at the Artesian well and on the Sands.

Professor V. E. Shelford, of the Department of Zoology, University of Illinois, advises us that he is conducting a field tour and giving a course in Animal Ecology in the Southwest this summer. It is understood that his party will consist of about 28 graduate students with teachers and other specialists. Their schedule shows they will be in the vicinity of the White Sands from July 4 to July 9. They expect to spend the heat of the days in the adjoining mountain section and conduct the study of the Sands at night.

The Alamogordo Chamber of Commerce has announced May 2 as the date of the 1936 White Sands Play Day, honoring 3,200 school children. On account of the intense heat in the Sands and no shade, the party will start at 2:00 p.m. and extend into the night with band concerts, Mescalero Apache Indian dances by Indian scouts, and wind up with community singing by moonlight. It is believed the crowd will greatly exceed that of last year which was 3,500.

Our Sunday count has nearly doubled this month. On Sunday I stationed the Assistant Custodian (W O P) at the side of the road with instructions, or probably I better say with a request, to count cars and occupants. There were 69 cars that went to the Turn-around that afternoon. Yesterday afternoon, in the midst of an old-fashioned dust storm with visibility running from zero to half a mile, there were 41 cars that drove to the Heart of the Sands in 4 hours. Our Sunday visitors this month are as follows: February 23, 357; March 1, 391; March, 8, 521; March 15, 443; total Sunday visitors, 1712. Barry's count for 92 hours this month shows an average of 89.74 cars per day with 33.143 percent stopping in the Sands. This gives us 2,973 week day visitors this month. Total visitors, 4685.

Registration at the Turn-around was 747 with 34 states and six foreign countries represented.

Vincent Vandiver and Dr. Lewis, Park Service geologists, dropped in for a look at the White Sands, just in time to get their names in our list of distinguished visitors.

****

GRAN QUIVIRA

By W. H. Smith, Custodian

I will try to submit something for the report as Mr. Boundey arrived late in the month and he has asked me to send in something. Up to the time I turned it over to Mr. Boundey I had registered 152 visitors entering the Monument in 40 vehicles. This number I believe is below the same month last year.

On February 29 Mr. J. H. Diehl, associate engineer, came in and located and staked the ground for the pressure tank and engine house. Mr. Gipe, foreman in charge of the water work here, arrived on March 9 and began work on the eleventh. He has the pit dug for the tank and his lumber and cement and gravel are on the ground if he had enough reinforcement to complete the job he could begin pouring the concrete as soon as the forms are made. Taking it on the whole the work has progressed nicely. On date of March 14 Mr. Diehl came by again for a few minutes and was well pleased with the progress made on the job.

Well, as this will be my last report to make to you folks I will make it short and turn this over to a man that can do better by it than I ever have done. Mr. Boundey arrived on date of March 18 and took charge on the 19th. May he enjoy the future here as I have enjoyed the past. Here is wishing the entire Southwestern Monuments' force many more pleasant and prosperous years.

By George Boundey

Mr. Smith has asked me to add a few lines to the monthly report.

The family and I arrived at Gran Quivira on the 18th. We found everything going along nicely. Mr. Gipe is busy with the pumping plant and assures us we will soon have water on the monument for daily use.

At present they are hauling water in barrels about six miles.

The weather is much more spring-like than when we left here three weeks ago, and we are looking forward to a good summer season for visitors.

About 13 miles of the road to Mountainair is newly surfaced and about 20 miles of the road from Gallina Station are also surfaced. When both these roads are completed, it is bound to bring visitors to this Monument.

Everyone is sorry to see the Smiths leave. He has done a good work up here. Will endeavor to follow out Mr. Smith's policies as far as possible.

****

CASA GRANDE

By W. J. Winter, Custodian

The visitor count this month was 2,705. This count is taken from our stamped time slips as tabulated on SWM Stencil No. 16. This I believe is more nearly accurate than the count from the register, as some people are bound to get away without registering and others whom we see registering fail to put down the whole party. We can't very well stand over everyone while they are at the book. The number in each party as recorded on the time slips, however, is by actual count, one by one. I use the Veeder counter regularly. So, while there may be a few who escape being counted in this way, it is certain that the count is not too big and is closer to being complete than is that from the register.

The weather was very nice up until last Sunday, March 22. Temperatures had been running close to 90 and the nights were not as cold as they had been. Sunday we had a bad dust storm until noon, when it began to rain. Weather has been cold ever since and is just now starting to warm up again. Maximum temperature was 89 on the 19th and 20th and minimum 31 on the 27th. Precipitation was .34.

We met a few visitors this month who are worthy of special mention. February 28 Dr. Charles Mayo and Dr. Will Mayo, famous surgeons of Rochester, Minnesota, brought a party to see the ruins. March 3 we greeted former Governor Huntley Spaulding of New Hampshire. March 11 the Monument was visited by Watson Smith, of last summer's Rainbow Bridge Expedition, who has been doing archeological work for the Museum of Northern Arizona and the Gila Pueblo. March 17 we met A. J. Chitty, United States Marshall of Tacoma and Seattle, Washington. March 24 the ruins were inspected by Dr. C. L. Fenton, paleontologist of West Liberty, Iowa.

The only large group was a party of 90 school children from Eloy, Arizona, on March 13. No NPS visitors are recorded, all who came in being for Headquarters only.

It seems, Boss, that my grey hairs are not as noticeable as I thought they were. A few weeks ago an old lady from a party of visitors came in the museum door and looking at me said "Well, what are you, a guide?"

"Well," said I, "I am acting as such."

"Hm'm," says she, "A young student, perhaps!" And swept on, leaving me silenced.

March 3 we were very glad to see Leonard Heaton of Pipe Spring. We enjoyed having Leonard here, and he held down the Ranger's position quite capably. We were all mighty sorry that he had to leave on the 20th and sincerely hope to see him again some of these days.

On a day off a few weeks ago, the H.C.W.P. and I visited Saguaro National Monument. That monument has more possibilities than I had realized. We found it highly interesting and well worth seeing. In addition to the natural attractions of the place Paul has a very interesting little trail along which he takes visitors and tells them about the cactus and other plants they see. Paul was plenty busy, too, when we were there, several carloads arriving before we left.

We are still having our troubles with maintenance here. I am still waiting hopefully for funds for a new sewer system. In the meantime, we continue to pump surplus water out into the open ditch which more or less disposes of it. When the wind blows from the direction of that ditch and pump, it is unpleasantly noticeable around the public contact area of the administration building, parking space and picnic grounds as well as the residence area. To say the least it is a poor advertisement for the Park Service, and I cannot help but think that it may be a menace to health when the warm weather comes.

Part of our electric plant has also been out of order for some days. If the trouble were mechanical we probably could have fixed it, but, being electrical, we had to find an electrician and electricians are few and far between in this neck of the woods. Finally the Indian Service kindly loaned us a man, but as yet the trouble remains unlocated. All of which darkens my sunny nature as I contemplate the electric line running right past our fence. If we just had a few dollars to bring that line into our monument, what a saving it would mean in money, time and vocabularies! With the installation once made the upkeep would be about one-third of what our troublesome system costs now, so eventually there would be a great saving to the government. Therefore, let us pray.

For relaxation (?) we are working on Bob Rose's question survey. He will have more to say about that when it is finished. In the meantime, visitors' questions are being recorded whenever possible, and wotta list!

Speaking of questions, visitors, etc., I was interested to read Johnwill Faris' remarks last month about not needing a day off. I am mildly curious to know if he would feel the same way after lecturing on the same subject for six hours a day for ninety days.

Ranger Charlie Steen returned the other day after his exchange detail to Walnut Canyon. It appears that he had almost uninterrupted sleep there for the last week because of the quantity of snow. Now he wants it to snow here. I never liked snow myself, but I am beginning to recognize its advantages.

****

EL MORRO

By Evon Z. Vogt, Jr.

Travel for the month of March was sixteen times heavier than for the month of February. This month's visitors total sixteen. Two were local people and the rest were from Minnesota, Alabama, Kentucky, Iowa, and Pennsylvania.

The custodian and I made a careful inspection of the monument today. We were surprised and pleased to find a big caterpillar and grader on the El Morro Scenic Highway. It is Indian Service equipment grading up the main road of this part of the Navajo Reservation. They are wisely following the same course which was laid out so as to serve El Morro, the El Morro Airport, the Navajos living south of Ramah, and all the Atarque country. The men working on the road receive orders from the Central Agency and are doing a fine job of improving the road.

We found the ranger's cabin unmolested and the inscriptions unmarred. The water in the cove has reached a point just a foot and a half below the spillway. The end of the pipe line which I left in the water all winter was undamaged. I shall start the water siphoning next week to prevent homesteaders from driving over the reclaimed area when they start to haul water.

The little clumps of transplanted grass sod in the reclaimed area are getting green already and this year they should mature and produce seed. The ground in the middle of this area has settled more than three feet during the winter.

The lower part of the trail leading up the south side of the Rock was found to be in excellent shape having not been washed at all by melting snows. But up above we found that all the steps which had not been replaced by concrete were disintegrating to such an extent that it will be necessary to replace them with concrete steps before the end of the year.

And say, Boss, nobody has ever explained why the Copperas which was put on the new steps by Harry Brown turned snowwhite. It makes them look as artificial as a marble stairway in a Long Island mansion.

With better weather and improved road conditions, travel in April should be more nearly normal.

By Evon Z. Vogt, Sr.

I arrived home from the mine at Summitville, Colorado, on the 2th and have been enjoying my family to the limit ever since. My trip from Colorado was easy for my car except the last 15 miles, which were an unforgettable struggle, emphasizing again the great need for road work at this point.

In Santa Fe I met my old college room-mate and friend C. Arthur Bruce of Memphis, who motored out with me for a few days' visit. In pulling my car out of the mud at one place he pulled the frame of his car apart. His disgust at the continued neglect of the roads was such that his remarks were really worth recording. One was "Coronado may have conquered this country, but no one has been able to do so since then."... "I'm going to try to get control of this region so I can give it back to the King of Spain." Another "Hereafter I'll address you: Evon Z. Vogt, Mud,New Mexico."

At that I was able to see some improvement since the lane leading through the farmed basin of the Ramah valley has been graveled and the Indian Service has begun grading south of the ranch en route to El Morro Airport.

It now becomes our duty to see that this improvement swings around beyond that point so as to reach the Monument also. Since my arrival I have been asked to secure some of the large culverts lying unused at Paxton Springs for this road. I think that as I return to Colorado thru Santa Fe that I can get whatever culverts are needed by seeing the State Highway Department.

My friend Bruce became so wrought up about the roads that he is taking his club in hand upon his return to Memphis in behalf of this country. Since men like Senator Pat Harrison and Joe Robinson are his personal friends, he is going to make an appeal to them in the interest of road improvement.

In the mass of mail at my home I found the very colorful announcement of the Coronado Cuarto Centennial to be held in New Mexico in 1940. The Coronado Commission, Albuquerque, New Mexico, headed by Dr. J. F. Zimmerman as president and Gilberto Espinosa as secretary has done well in getting this well-written announcement before the public. In it the re-enactment of Coronado's entry into the Zuni country and his visits to the pueblos and passage thru the state with his camp at a point near the present Bernalillo are described. We read also "Other events will take place at Inscription Rock, where the records of so many later Spanish explorers, carved by them in living stone, are as legible today as they were centuries ago. Even pre-Coronado historic background will receive attention at the ruins of Chaco Canyon, Rito de Los Frijoles and Puye."

I am writing Mr. Espinosa to get a supply of these announcements and will surely make it a point to see him in Albuquerque as this celebration which will give proper place to our wonderful history and be a year-long program is a matter which has long been close to my heart. I am anxious to do whatever I can to further it and make it a success along authentic lines.

I am sure our monuments and the Park Service will be called on for much cooperation and that during that year our travel interest throughout this fine southwest plateau country should increase as never before.

The visit today to El Morro was delightful, an occasion long to be remembered, and I am thankful that my son and I took the time to go over all features slowly. We even mounted on the trail to the top of the great mesa to drink in the view, to talk about future excavation of the ruins.

Than we crawled under the fence and made our way thru the piñon woods to hunt out the "hogan" of my old friend Rafael. We finally located his humble home and knew from the smoke curling out of the hole in the roof that he was at home.

We found him seated on a sheep skin, side of the fire where the sun shone down thru the smoke hole. His daughter was just finishing combing his snowwhite hair with her sacaton brush.

Rafael must be close to 90 now but very alert and active. He was delighted to see us. His interest in my mining activities came out right away and I was glad that I happened to have a small piece of ore in my pocket to show him. His eyes were able to spot the free gold which glistened in the sun and stirred up plenty of conversation in the Navajo language among all members of his family, all of whom wanted to see the "Picture rock."

His grandson is ailing badly with T B and has lost one-fourth of his weight since I last saw him. Rafael assured me that both Navajos, Dick Jose Pino and old Carrissoso, had been there to sing for his welfare and that their medicines and influence had brought about an improvement in his condition. Despite all that I hope to get the boy moved to some Indian Service Sanitarium where he can get the mild, eggs and nourishing food which will enable him to get well if it is possible.

In closing let me thank you for the Monthly Report you have sent me to my Colorado address and to express to all those who contribute to it my appreciation of their combined efforts in producing every 30 days what I regard one of the most valuable and interesting reports in the entire country.

I'll be returning to mines, mills, and metallurgy in a few days, but always El Morro and the Park Service are in my mind when I think of home.

****

NATURAL BRIDGES

By Zeke Johnson, Custodian

Some time ago a very fine friend of mine, Dr. J. E. Brodus, who represents the Standard Optical Company of this city and broadcasts for 15 minutes every tuesday eveing over KSL on the subject "Seeing the Scenic West, with Dr. J. E. Brodus," asked me if I would like to use his time. Consequently, Tuesday, the 24th, I gave the talk herein enclosed (see Supplement).

In being introduced by the Doctor, He made mention that there was a booklet of 74 pages published by the National Park Service that could be had for the asking. Be that I had a supply on hand of the "Glimpses of Our Monuments!" Now we are swamped with requests for some, and I have only one left. What can I do? Can you send me some or tell me where I can get a supply? I need 30 or more already, and I believe I'll need two or three times that many. If they are out of date, is there any other literature on the Bridges? I had several telephone calls congratulating me before I left the studio. The lead man at KSF said those programs were heard by at least a quarter of a million people. So, if I include them in my next report, I'll have a real report, ha, ha!

I have the promise of another evening about the second or third Tuesday in April. I had so many asking for a treatise on the Natural Bridges that I have only one left, and I must have something to send out. Just yesterday the boss of the American Auto Association asked me for some folders and said he surely needed something on the monument for so many people were asking for information. Oh, I must have some folders or something to send out; it embarrasses me to tell people I have nothing. Please help me out.

I feel just a little proud of what I have done this month. Had a fine outing of five days with four men, making the circle trip through San Juan on through Monument Valley, Tuba, Lees Ferry, Zion and Bryce; the first time I ever made the trip as a guide with nothing to do but sit back and try to look wise. Then I had my first experience over the Radio, and, as a result, have been flooded with telephone calls asking about the best time to visit the monument. I have also had several chances to speak at various classes and small socials. I am also glad to report that the State Road Commission has promised to do a lot of work on the road from Blanding out to the monument. They have done away with the horse outfit that they have had on the San Juan road and have out on a new caterpilar tractor. Therfore, I am looking forward to better roads

I have been told unofficially that there is a move on foot to greatly enlarge the monument and change the name to Escalenta. Oh, I hope and pray that the name will never be changed, for the name Escalenta would mean nothing to the Natural Bridges. When I am officially notified of the change of the enlargement of the monument, I

Arizona [illegible] Library

MAY have some suggestions as to its name. I am just raring to go now and will be at the monument just as soon as I can get over Elk Ridge. Then I'll repair my trails and be ready for the rush. I am sure I will have plenty of visitors this season.

****

HEADQUARTERS STUFF

BRANCH OF EDUCATION By Robert H. Rose, Park Naturalist.

March, 1936, has been a very busy month for the Division of Education. With the exception of short field trips detailed later in this report, Junior Park Naturalist King has been at Headquarters for the entire month. Junior Park Naturalist Caywood was in the office between February 25 and March 16, inclusive, after which he left for Tumacacori to spend the remainder of the month on relief duty.

Educational Contacts Records:

Several days at the beginning of the month were required to bring educational contacts data up to date. The statistics for the months of October, 1935, to February, 1936, inclusive, were tabulated and these will be found in the Division of Education report for February. The statistics for March are found at the close of this report making a total of six months of the current travel year for which we now have educational contacts data. Nearly all difficulties and minor technicalities seem to be satisfactorily worked out, and it now appears that further revisions of the data will not be necessary.

Examination of the tabulations for the past six months shows convincingly that Southwestern Monuments has no open and closed seasons as far as the educational program is concerned. With the exception of the December, 1935, "low" of 8,492 educational contacts, those contacts are well over 10,000 visitors per month.

For some time we have been considering a survey of the questions usually asked by national monuments visitors. It was our thought that the results of such survey might serve some useful purpose. For example, the results might give us a better idea of what the function of our museums should be; the type of questions and the answers may give us a still better idea of the degree of simplification required in exhibits and labels; and we will at least obtain concrete evidence that the rangers among our monuments whose chief duties are public contacts must possess a great deal of general and specific information about their monument and the region as a whole.

Such survey on all of the monuments would be of interest if carried out over a period of time. However, in only a few monuments

are we situated where we can easily collect data. Accordingly, such survey is now being carried on at Casa Grande, Tonto, Montezuma, Aztec and Bandelier. In the report for April we expect to include a report on the results of this question survey.

Administration, Clerical Work and Personnel:

A list of items desired for inclusion in the Preliminary Estimates for Fiscal Year 1938 was prepared and submitted; a volume of letters of application and requests for general information was handled; some 200 posters were wrapped and mailed to various civic organizations, schools and others who might appreciate getting them; and 1500 Forms 16 for distribution to monuments were made. Attention was also given to matters relating to permanent and temporary personnel.

For a period of about a week Messrs. Pinkley and Miller were in the field and as Acting Superintendent the writer handled the usual volume of routine office matters in their absence.

For a long time we have needed a photographic file for pictures for which we do not have the negatives. Superintendent Pinkley developed a system for photos accompanied with respective negatives. During the month the writer gave several days' attention to developing the new photographic file. All photographs have been assorted according to monument or subject and placed in suitable containers for filing. There now remains the rather huge task of entering some 800 to 1,000 legends and numbers. At least we now have all photos classified and organized in such manner that additional accessions can be properly cared for.

Museum Plans:

The following progress has been made during the month with reference to preliminary museum exhibits plans:

1. First in order of importance is the preliminary exhibits plan for Montezuma Castle. Junior Naturalist Caywood drew up a preliminary plan. After the initial preparation the plan was discussed among headquarters staff members. Certain suggestions were offered and revisions made. As specifications for each exhibit are worked out, revisions for the better are certain to be made. The completion of this preliminary plan is another important step forward in our program of museum planning.

2. Junior Naturalist Dale King has been making progress on drawing up detailed specifications for exhibits to be placed in the Bandelier Museum. This is the next step which must be taken even though the preliminary plan is thoroughly done.

Several case layouts for Bandelier have been worked out by him in detail such that they can be used by museum preparators at once without modifications.

3. The Aztec Museum has been studied and a plan worked out for more efficient utilization of existing exhibits space.

Gifts and Accessions:

Several important accessions have been made during the month among which are the following:

1. A consignment of books on Southwestern subjects for the headquarters library and to be placed in circulation as much as is practicable, received from the University of California, Berkeley.

2. A number of volumes of the B.A.E. Reports have been received now giving us a more complete series of these publications.

3. "A Manual for History Museums" and "Small House Museums" were received.

4. Twenty-five copies of Caywood's and Spicer's publication on "Tuzigoot" were presented to the library and the individual monuments.

5. Several consignments of metal self-guiding trail labels have been received from the CCC laboratories of the San Diego Exposition working under direction of the Field Division of Education.

Field Trips:

Junior Naturalist Caywood was in the office until March 17 when he left for Tumacacori National Monument to work on relief duty. The completion of the Montezuma Castle Preliminary Exhibits Plan was his most important accomplishment during this time.

With the exception of short field trips to Saguaro and Tumacacori, Junior Naturalist King has been on Headquarters assignment during the whole month.

The writer mad no trips to other monuments during March. No special lecture contacts were made.

Report of Junior Naturalist King:

10 days on February Monthly Report.
Mimeographed: Navajo Arts and Crafts exhibit entry books for Wupatki;

bird banding record cards.
Wrote 34 letters.
Completed and sent to Field Division of Education for approval plans for two cases at Bandelier National Monument. Much of the ground work of these cases had been laid capably by Custodian Earl Jackson at Bandelier.
Kept natural history and bird banding files current.
Arranged botanical identification procedure with Boyce Thompson Southwestern Arboretum staff.
Prepared two skins (Cactus Wren; Wilson Snipe) for Headquarters study collection. Birds had been accidentally killed and were brought to us for saving.
Started 15 mesquite seedlings for landscaping purposes.
Half day investigating purported cave in ruin south of Eloy.
Two trips to Saguaro; one to Tumacacori.

Report of Junior Naturalist Caywood:

February 25 to March 16 spent at Headquarters, Southwestern Monuments, Coolidge, Arizona. During this time work was done on the following projects:

Eleven days were spent on Proposed Museum Exhibits Plan for Montezuma Castle National Monument; three days, writing article on the figures on Hohokam pottery, in conjunction with Mr. J. E. Fast, to be used in the Supplement; one day spent in assisting personnel of Casa Grande National Monument with visitor guide duty. On the afternoon of March 11 went with Dale King to see ruin reported near Eloy, Arizona. One and a half days spent working on Place Names for Wupatki National Monument and one day mailing out Tuzigoot reports.

The remainder of the month, February 17 to 25, spent at Tumacacori National Monument on relief duty. During this time the Proposed Museum Exhibits Plan for Montezuma Castle National Monument was completed.

***

BRANCH OF ENGINEERING By J. H. Diehl, Associate Engineer

At Tonto National Monument, Transitman Clark and Rodman Schmidt completed the field survey for a new road alignment, early in the month and left their notes at Coolidge with Engineering Aide Tovrea who immediately started preparing the necessary plans in hopes that an allotment for construction might be obtained.

However, Superintendent Pinkley was advised in Washington that no funds were to be had at this time, and so far we have been unable to get the requested boundary extension to this monument, across which the proposed road would connect with the State Highway.

The existing road to Tonto is passable, but the amount of visitor travel to this monument certainly justifies construction of a new road and expenditure for further development of the headquarters area.

Transitman Clark and Rodman Schmidt moved down to Chiricahua National Monument, where with the assistance of CCC enrollees they will endeavor to complete the topographic survey for a map of this monument.

Under ECW Superintendent Stevenson at Chiricahua National Monument, Engineer Foreman Harris is staking the location and making the necessary property ties for the telephone line to connect with Portal, Arizona.

The monthly allotment of ECW funds reduced for the seventh period from $4,000 to $2,833.33 is going to greatly handicap any building construction in the coming period as the amount allotted leaves such a small balance for purchase of materials and supplies, beyond the regular payroll, gas, oil, and incidental expense.

This same condition also affects the operation of the ECW program at Bandelier National Monument, where we will not be able to construct the proposed telephone line, but we must also abandon the construction of the fence project, material for which has already been purchase--- owing to the cost of operating a fly camp for this construction.

At Gran Quivira National Monument, work finally was commenced about the middle of this month on the installation of the pump and pressure tank for water supply. Weather conditions have been rather unfavorable retarding progress, and Foreman Gipe will most likely spend most of April on this project and constructing water lines.

While plans have been slow in reaching project Foreman Happer of the Resettlement Administration at White Sands National Monument, he has kept his men busy mainly on the dike construction and the fence project.

***

PROPOSED RODENT CONTROL AT CHACO CANYON

By Adrey Borell, Regional Wildlife Technician

In accordance with advice from the Washington Office I attempted to learn the advisability of rodent control at Chaco Canyon National Monument. Rodent control had been requested in order to facilitate the erosion control work being conducted on the monument by Soil Conservation Service.

On February 25, I went to Gallup, but found the road from there to Chaco Canyon was impassable. However, I was able to discuss the matter with Associate District Manager W. C. McGinnies, Regional Biologist E.D. Eaton, Engineer Clifford, and Assistant Biologist L. V.

Compton, of the Soil Conservation Service. We arranged to make a trip to Chaco Canyon as soon as the roads were open.

On March 12 and 13, Assistant Biologist L. V. Compton, Assistant Agronomist H. B. Coddington, Project Superintendent Lewis McKinney, Custodian T. C. Miller, and I went over the erosion and rodent problem at Chaco Canyon. The area has been overgrazed, and erosion is in an advanced stage. We found rodents numerous in the canyon portion of the monument. Our short survey indicated that Kangaroo rats, antelope ground squirrels, and white-footed mice are abundant. Cottontails are fairly common, and there are two very small colonies of prairie dogs. Harvest mice are present, and probably pocket mice also. Pocket gophers are scarce.

From my observations in the field and from discussions with representatives of the Soil Conservation Service, I believe that rodents may encourage erosion or hinder control in the following ways: (1) the larger rodents such as kangaroo rats and ground squirrels burrow into levees which have been built to control flood waters; (2) These large rodents, along with the smaller ones, gather seed planted to revegetate levees or denuded areas; (3) In some cases rodent burrows may carry water through the more stable surface soil, thus causing slopes of arroyos to sluff more rapidly, or might possibly start new lateral arroyos; (4) In some cases where rodents are numerous they may consume enough vegetation and seed to be a factor in checking natural growth of vegetation.

The party agreed that at Chaco Canyon only the first two points will be of importance. Rodent burrows in levees might easily cause breaks, and when the levees are seeded rodents will undoubtedly take a portion of the seed.

So far not enough research work has been done to determine definitely the role of rodents in erosion and re-seeding operations. How far various species of rodents will forage into the open, or what percentage of small seed such as grass might be taken, is not known.

If control of rodents were undertaken along the main Chaco Wash and its many lateral "headers" it would involve control over most of the canyon, an area seven miles long and about one mile wide. Since erosion along the main wash and its laterals is already so terrific, the small amount of increased erosion due to rodent work does not justify an attempt to control rodents along all of the washes. (Reference to photos in original report)

The party agreed that the prairie dogs should not be destroyed, as this would mean elimination from the monument of an entire species. There are only two small colonies of prairie dogs (a total of about 15 individuals) in the canyon; neither colony is very close to proposed

levees. Furthermore, there are no other colonies nearby which might spread into the canyon if those now present were destroyed.

Regional Biologist Eaton told me that rolled oats poisoned with strychine is used in controlling rodents on Soil Conservation Service projects. Cottontails, and some birds such as horned larks, members of the sparrow family, and possibly others may be killed by the poison grain. I suggested trapping as a means of control, but the Soil Conservation Service representatives felt that this method would be impractical, due to the great expense. Coyotes, foxes, and badgers are present, and a few may be killed through eating poisoned rodents.

Re-seeding and rodent control (if authorized) will be done some time before the end of June; that is before the summer rains. Erosion and rodent control work is done under the supervision of Soil Conservation Service. Labor is done by Navajo Indians employed through CCC funds.

The monument is now fenced and domestic stock excluded. I believe the work of Soil Conservation Service and the exclusion of grazing will do much toward checking erosion.

RECOMMENDATIONS:

Considering the fact that erosion in Chaco Canyon is terrific and will eventually result in the loss of important archeological ruins unless checked, and the fact that the Soil Conservation Service is spending a great deal of time and money attempting to control this erosion, I recommend the following:

(1) That the National Park Service authorize rodent control within 100 yards of each levee or other area which has been or is to be re-seeded.

(2) That in this special case the Park Service authorize the use of poison grain in rodent control although it is against the general Park Service policy.

(3) That no control be undertaken along arroyos or in other areas where artificial re-seeding is not contemplated.

(4) That no poison be distributed anywhere in the vicinity of the two prairie dog towns.

All members of the field inspection party and Regional Biologist Eaton agreed on these recommendations.

STATISTICAL SUMMARY ON EDUCATIONAL CONTACTS FOR MARCH 1936

SOUTHWESTERN NATIONAL MONUMENTS

MONUMENT	EMPLOYEES		GUIDED TRIPS					MUSEUM LECTURES					MUSEUM UNATT'D		LECTURES OUTSIDE		MISC		TOTAL EDUCN CONTACTS	TOTAL TRAVEL
	PERM	TEMP	NO	ATT	TIME	AV ATT	AV TME	NO	ATT	TIME	AV ATT	AV TME	NO	ATT	NO	ATT	NO	ATT		
ARCHES	1/165																		(NO REPORT)	
AZTEC	2		89	462	2840	5.2	32	80	435	1460	5.5	18	1	2					899	602
BANDELIER	1		47	151	2614	3.2	56										6	14	165	429
DE CHELLY	1		4	20	660	5.0	165												20	25
CAPULIN	1/165		4	23	330	5.8	75												23	400
CASA GRNDE	2	1	351	2705	12100	7.7	35	248	2016	4783	8.2	19.2	84	689					5410	2705
CHACO CANY	1		16	70	1463	4.4	92	16	70	264	4.4	16.5							140	453
CHIRICAHUA	0																		(NO REPT)	350
EL MORRO	0																		0	16
GILA CLIFF	0																		0	(NO REP)
GRAN QUIV.	1		42	140	1683	3.4	40												140	152
HOVENWEEP	0																		0	(NO REP)
MONTEZUMA	2		95	518	4490	5.5	47	98	499	1857									1017	590
NATL. BRID	0														5	310	6	70	380	(NO REP)
NAVAJO	1/165																		(NO REPORT)	
PIPE SPGS	1-Lab		13	38	325	3.0	25								2	31			69	119
RAINBOW	0																		0	(NO REP)
SAGUARO		1	165	606	6375	3.7	39												606	2000
SUNSET CR.	0																		(NO REPORT)	
TONTO		1	93	444	5700	4.7	61	93	454	1550	4.8	16.6							898	816
TUMACACORI	2		227	1458	9570	6.5	44												1458	1573
WALNUT CAN		1	70	221	2660	3.2	38										8	24	245	360
WHITE SNDS	1/5		40	436	1950	11	49										143	772	1208	4685
WUPATKI		1	18	56	584	3.1	33										17	51	107	104
YUCCA HSE	0																		(NO REPORT)	
HDQTERS																				
TOTALS	13.2	5	1274	7,348	53,323			535	3474	9914			85	691	7	341	174	931	12,785	15,379

*12-permanent custodians and rangers; no ranger naturalists; and 1 temporary ranger.

**1-fifteen minute radio broadcast by Zeke Johnson; Station KSL, Salt Lake City, Utah. No estimate of contacts thru radio broadcasts is made.

DISCUSSION OF CONTACTS

By Park Naturalist Robert H. Rose

Records on educational contacts for the last six months are none available with the appearance of the Statistical Summary for March. Therefore, it is appropriate to take inventory of these tabulations and determine what facts are being revealed. In order to facilitate such study, condensed tabulations by months and by monuments have been prepared. These tabulations occur on the previous page. Following are some observations:

1. These tabulations show convincingly that we have no "closed season" during the winter months among the Southwestern Monuments. Total travel varied from a low of 8,525 for December to a high of 15,379 for March while educational contacts varied from a low of 8,492 in December to a high of 14,687 in January.

2. There is a consistent comparison between travel and educational contacts for each month of the past six months. In other words, as travel increases our educational contacts also increase, and vice versa. Generalizing, we would say that the greatest variations in travel occur at monuments where we have personnel which accounts for educational contacts fluctuating in the same manner as the travel.

3. The figures on educational contacts give a pretty accurate picture of the magnitude of the educational problem at various monuments during the winter months where we have personnel. The most astonishing surprise of the entire group is White Sands. Custodian Tom Charles has attempted to get a close check on travel and to contact about as many people as possible. The results show that White Sands ranks third among Southwestern Monuments in number of Educational contacts made while the same monument has first rank in travel. Tonto shows consistently heavy travel and no let up in opportunity for giving educational service. Walnut Canyon, generally thought of as a closed, "snowed in" monument during most of the winter had an average of nearly two groups of visitors daily (counting 96 "Misc" groups).

4. Tabulations show 14,085 contacts through museum lectures and guided service compared with 7,113 museum visitors not given guided service. Of the latter, 7,108 of these were at Casa Grande. Personnel shortage, making it necessary to use the museum as an assembling place, accounts for the inability to give these groups personal attention during their museum visits.

In the two tabulations on the previous page, the total travel in as well as the total educational contacts should check. The travel shows 75,724 in one table and 75,714 in the other - a discrepancy of 10 or 1/100 of one percent. Educational contacts show 71,153 in one table and 71,113 in the other, a discrepancy of 40, or 1/20 of one percent. While these discrepancies are negligible in their effect on the totals, an attempt

will be made to reconcile the two tables in new tabulations for April.

****

CLOSING

I wonder if anyone noticed that the February Report didn't have a "Closing." Since that was one of the best reports the Southwestern Monuments has ever produced, I am proud to say I didn't have anything to do with it! I was in Washington during the month and got back to headquarters about the day the report went into the mail. Dale said he was afraid to fake the "Closing" and the "Ruminations" under my name because if he didn't do a good job he might get blown up for it and if he did do a good job I might step out from under and leave him to do them in the future!

March is behind us and we pause here t look back over it and see if there is any lesson to be learned before we jump off into April.

The personnel sheet remains unchanged from February but will probably show some changes next month due to the early temporaries going on and a couple of change of stations among the regulars.

The attendance figures on page 139 are nothing to write home about, but it must be remembered that we have overhauled our system of counting visitors in the last year, and the '36 figures are conservative figures as compared with the two former years. Personally, I don't think visitors are falling off as indicated by the totals shown, but the difference is due to the change in methods of counting. I am confirmed in this opinion by a couple of thousand miles of travel which I made during the month in which I inquired of gas stations, cabin grounds, hotels, etc., as to the travel and how it checks with last year at the same time, the almost invariable reply being that there were more people on the road this year and that they were spending more both in total and per individual.

The incoming and outgoing mail count shows that the office has been busier than ever and I know from personal observation that the figures don't lie.

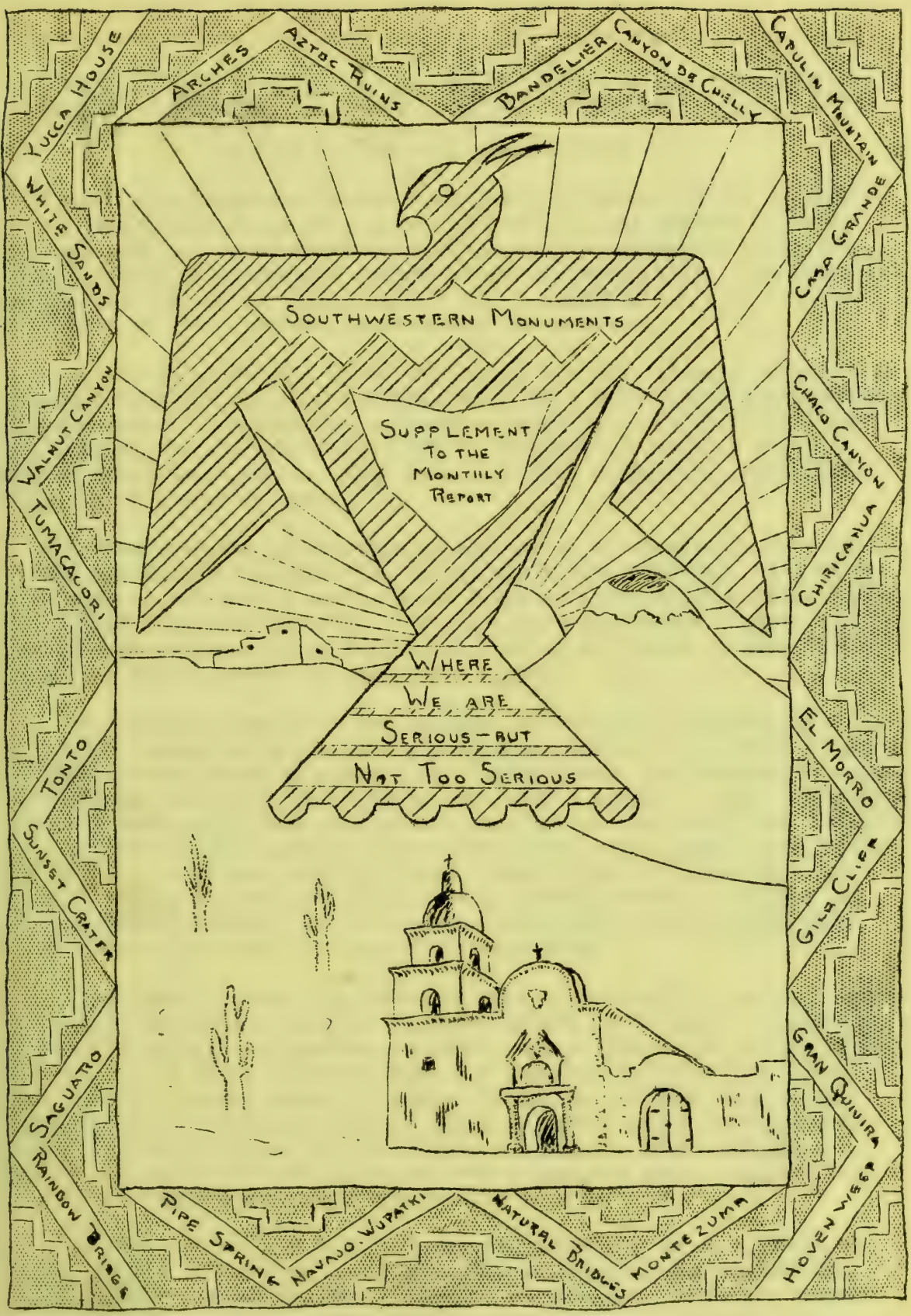
I told you in January you couldn't hold Zeke down; that he just went and hunted up people to talk bridges to; and in the Supplement this month we are giving you a transcript of what he talks. I think you will agree with me that it is mighty well worth while. Zeke, by the way, writes in to Bob Rose and wants credit for 250,000 educational contacts for that talk!

On the whole, we are going strong down in this district and it looks like there is plenty of work ahead to keep us busy.

Cordially,

Frank Pinkley

Frank Pinkley,
Superintendent.


Yucca House
Arches
Aztec Ruins
Bandelier
Canyon de Chelly
Capulin Mountain
White Sands
Casa Grande
Southwestern Monuments
Supplement To the Monthly Report
Walnut Canyon
Chaco Canyon
Tumacacori
Chiricahua
Where We are Serious — but Not Too Serious
Tonto
El Morro
Sunset Crater
Gila Cliff
Saguaro
Gran Quivira
Rainbow Bridge
Pipe Spring
Navajo
Wupatki
Natural Bridges
Montezuma
Hoven Wigs



LIFE FIGURES ON HOHOKAM POTTERY

By John E. Fast and Louis R. Caywood.

In the Southwestern United States many different tribes of prehistoric people existed in various localities for long periods of time. Living apart and under different conditions they developed along different lines, and expressed themselves in different ways. The knowledge we have of them is derived from a study of imperishable objects which they left in their houses, graves and rubbish heaps.

In the Gila and Salt River valleys of southern Arizona there lived a people we today call the Hohokam, which is a Pima word meaning "People who are gone." The Pima tribe, together with the closely related tribe, the Papago, which today occupy part of the territory of the Hohokam, may be their descendents. They were different from other prehistoric people in a number of ways.

A characteristic difference is the method of construction of their houses and walled villages, the latter now named compounds. All walls were made of caliche, a native earth found as a sub-stratum about three feet below the present surface. It was mixed with water to make a mortar of a thick consistency which was piled up in layers of approximately twenty to thirty inches by use of the hands.

Another peculiarity of the Hohokam is that they cremated their dead, and after cremation they placed the calcined bones in a pottery vessel or with broken pieces of pottery and buried them. The designs on a great many vessels are of a red or maroon color on a creamy or buff background called Red-on-Buff. The designs are usually well executed, and occasionally portray figures derived from life; human, animal and insect forms, which occur on plates, shallow bowls, jars, ollas and a few special shapes. These figures are usually from three quarters to one and one half inches in height. On the larger vessels they are repeated many times, extending around the vessel in many rows.

Some human figures join hands in what is evidently a circular dance of action and grace. There is also the effect of a circle of animals each stalking the one immediately ahead, and a circle of feeding birds. A whole jar or plate of large size or a repaired one with more than half of the original pieces is rare. It can be inferred that shapes were similar to other utensils of the same period which bore geometric figures: crossed lines, squares, dots, and various other elements. Smaller utensils such as plates and small jars are more likely to have only a few figures and occasionally only one.

It was thought that a minor contribution would be made toward an understanding of Hohckam lives by gathering together and reproducing as many figures representing life forms as possible. Some are shown on the plates following. The pottery of the Mimbres Valley is well

known for its representation of life forms, but many are highly imaginative and exaggerated. For instance, there is a piece showing a man on the back of a grasshopper; there is no mistaking the grasshopper. This is clearly impossible, yet it establishes the fact beyond question that grasshoppers existed during or before the time of the Mimbreños. Although this may be suspected or assumed, where else can one obtain as positive a confirmation of that fact? Similarly, it is hoped that Hohokam figures, when many more are obtained, will show something definitely which is now only suspected.

The plan followed was to visit all collections of Red-on-Buff pottery available, and to photograph the figures. Nearly all figures were secured, however, from fragments of former sites of archeological investigation. The amount of broken pottery, literally tons of it, that comes from an archeological excavation in the southwest can hardly be realized by one not familiar with the work.

Photography rather than sketching was used, because it was necessary to reproduce accurately. One figure may be either a deer or rabbit, another may be either a quail or a parrot, and a less accurate reproduction would tend to throw the identification one way or the other. From a photographic print an outline tracing was made on white cardboard by means of a carbon paper under the print. The tracing was then filled in solid with black India ink.

Much of the design on Hohokam pottery is quite easily rubbed off, and many figures had to be examined closely to make certain of the exact outline. However, the contrast between the bluish-red markings and the buff background was more pronounced in the photograph, when a suitable color filter was used over the lens, than when inspected by eye. In all except ten cases the figures are about eighty percent of the size of the originals, which was the largest percent of reproduction that could be obtained with the cameras at hand. The ten referred to were usually much larger figures in the originals, and were made smaller purposely, as the smaller size was more suitable for reproduction. Two of the figures were built up or re-assembled from a sherd that showed several repeated parts of figures but no complete ones. Each part of the completed figure occurs somewhere on the sherd. With these exceptions, great care was taken to avoid supplying missing parts and lines. For instance, the figures with a basket and staff in one hand (Plate II) would probably hold a crook as do other figures in the same plate if the sherd had not unfortunately been broken off at that point, but this is only a probability and cannot be definitely known.

The figures seem to have been drawn one feature at a time. For instance, a bowl with a line of repeated turtles appears to have had all the bodies painted in first, and the legs and heads added after completion of the bodies. This is evident because the color concentrates in a drop at the end of the brush stroke, visible because it

is a much darker bluish-red than the rest of the line of color, and often when the painter drew the appendages the paint had been thinned and was slightly lighter in color. There is a sureness in the stroke of the brush, which must have been nothing more than a chewed piece of yucca blade or a twig, and a fascination in their repetitive technique that is most interesting, and yet the lines themselves are extremely crude.

No facial features in the human forms are even attempted, excepting rarely a dot representing an eye; in fact, an attempt to make the facial outline with the tools that were available, would have detracted from the artistic value of the product. The little figures are, nevertheless, realistic, and perhaps in many cases portray the life of the times without the least imagination on the part of the observer.

The dancing figures (Plate I) seem almost to be in motion, and the action which they show is characteristic of the social and religious dances of the present day Indian. Today we know that both the Pimas and the Papagos gather from miles around for the social and ceremonial dances. These are gala affairs which everyone attends dressed in his best and all thoroughly enjoying themselves.

In Plate II the figures with the crook predominate. Besides being a utility implement it might have some ceremonial significance, as it appears as part of the regalia of the dancing figures. In modern times the Pimas occasionally used their burden baskets supported by a tumpline across their foreheads. Some of the baskets in the drawings may have been earlier forms of burden baskets. Below is the hump-backed flute player so common to the Pueblo region.

The animal figures which seem to represent dogs, deer, antelope or rabbits (Plate III) are very common, but in form are so much alike that it is hard to tell what kind of animals they are. Below them on the bottom row of Plate III are two figures which are clearly scorpions. The middle figure has not been identified.

On Plate IV bird figures are numerous and a number of different birds are found. Probably the most common is clearly the quail of this region, the Gambel Quail. Others might be Road Runners. Some of the longer-legged birds might be wading birds, probably common at that time in the Gila River Valley.

The last are the reptiles shown on Plate V. Three bird figures are also shown on this plate. The first one may be a Turkey Vulture; the second shows what may be a flock of eagles or hawks. The third was not identified. The reptiles seem to be turtles, lizards and Gila Monsters.

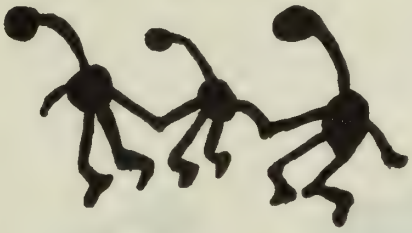
This short paper is only a beginning in the study of figures on Red-on-Buff pottery. It is hoped that it may inspire others to do more work along this line.

Appreciation is gratefully expressed to the following institutions and individuals for their kindness in permitting the writers to study their collections and photograph desirable specimens: The Gila Pueblo Globe, Arizona; The Casa Grande National Monument Museum; The Arizona State Museum, Tucson, Arizona; The Heard Museum, Phoenix, Arizona; and the private collections of Mr. Walter C. Smith, Coolidge, Arizona, and Mr. Carl A. Moosberg, Sacaton, Arizona.





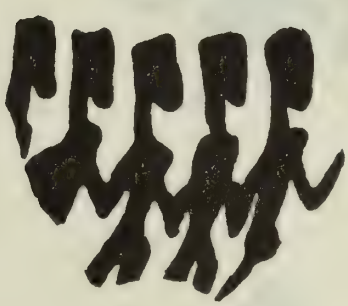


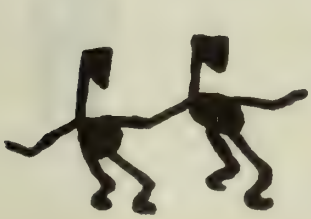






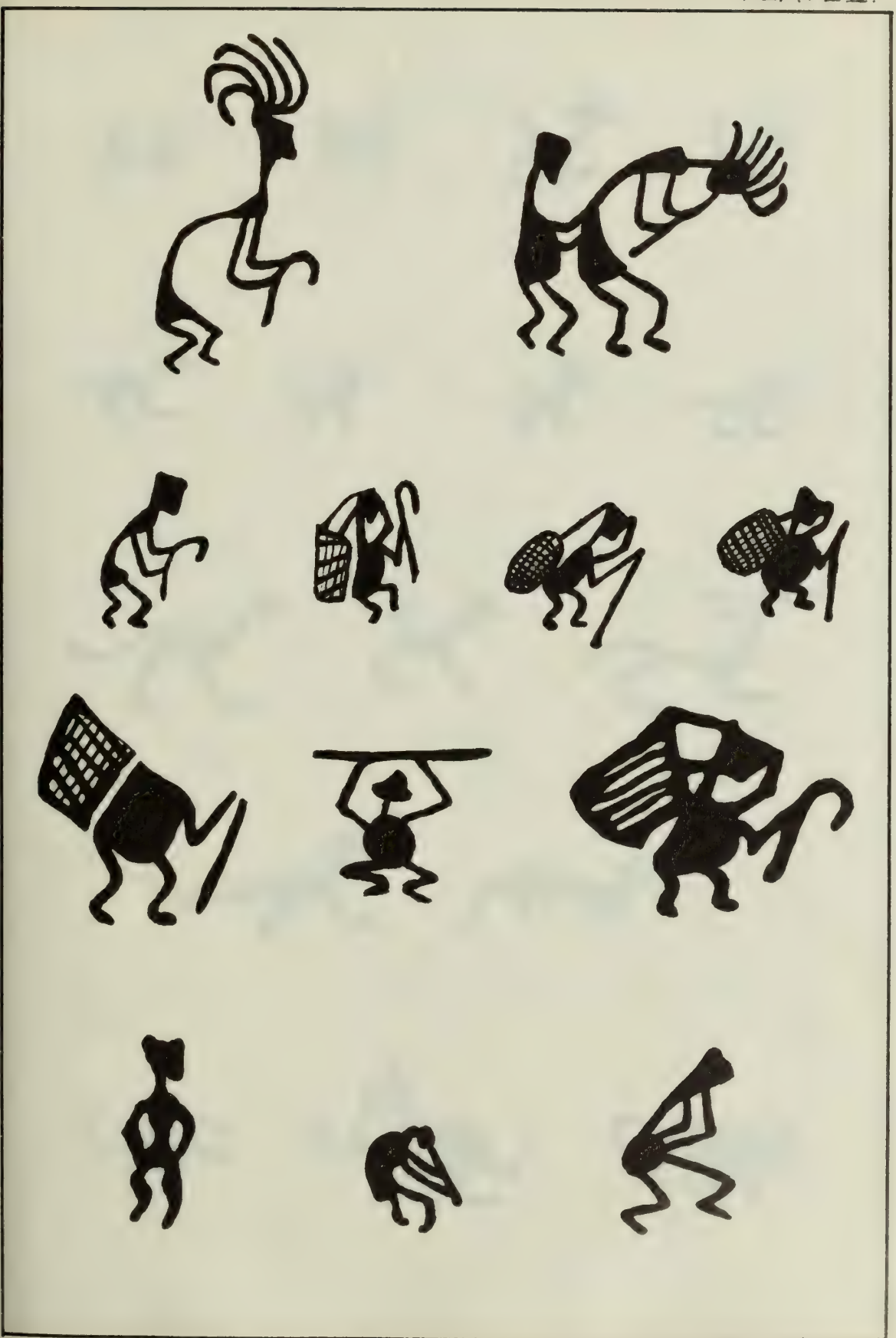




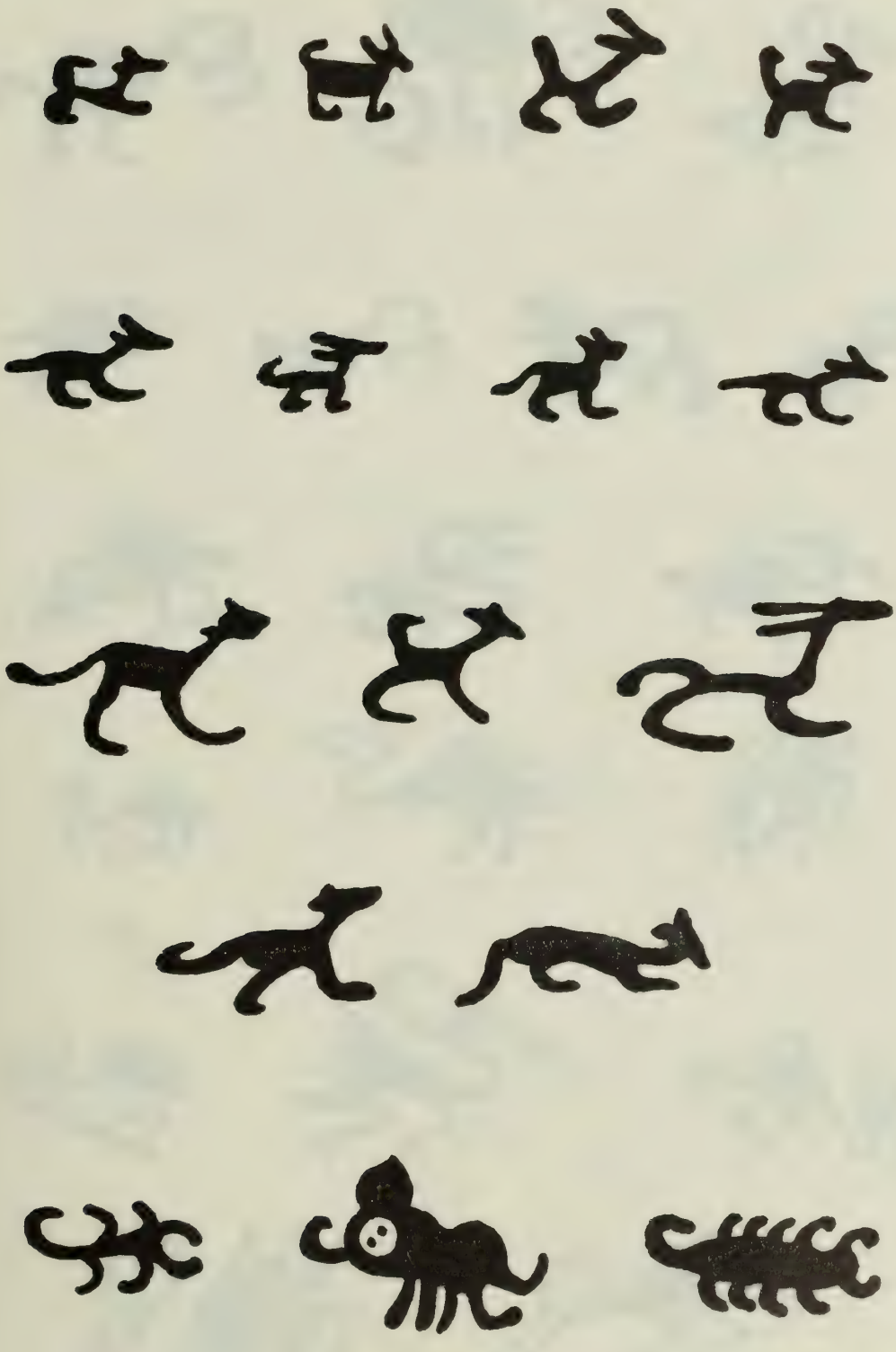




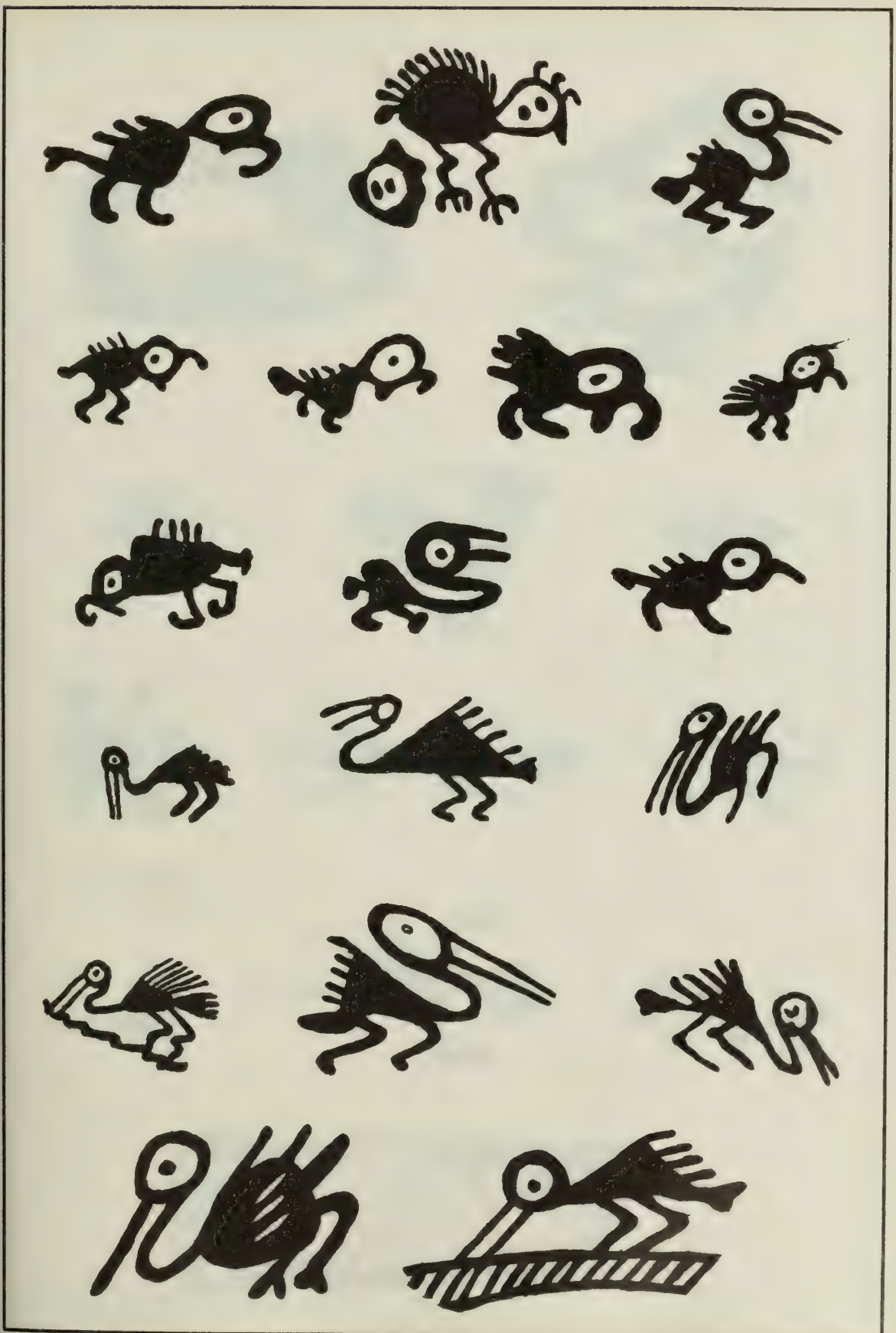




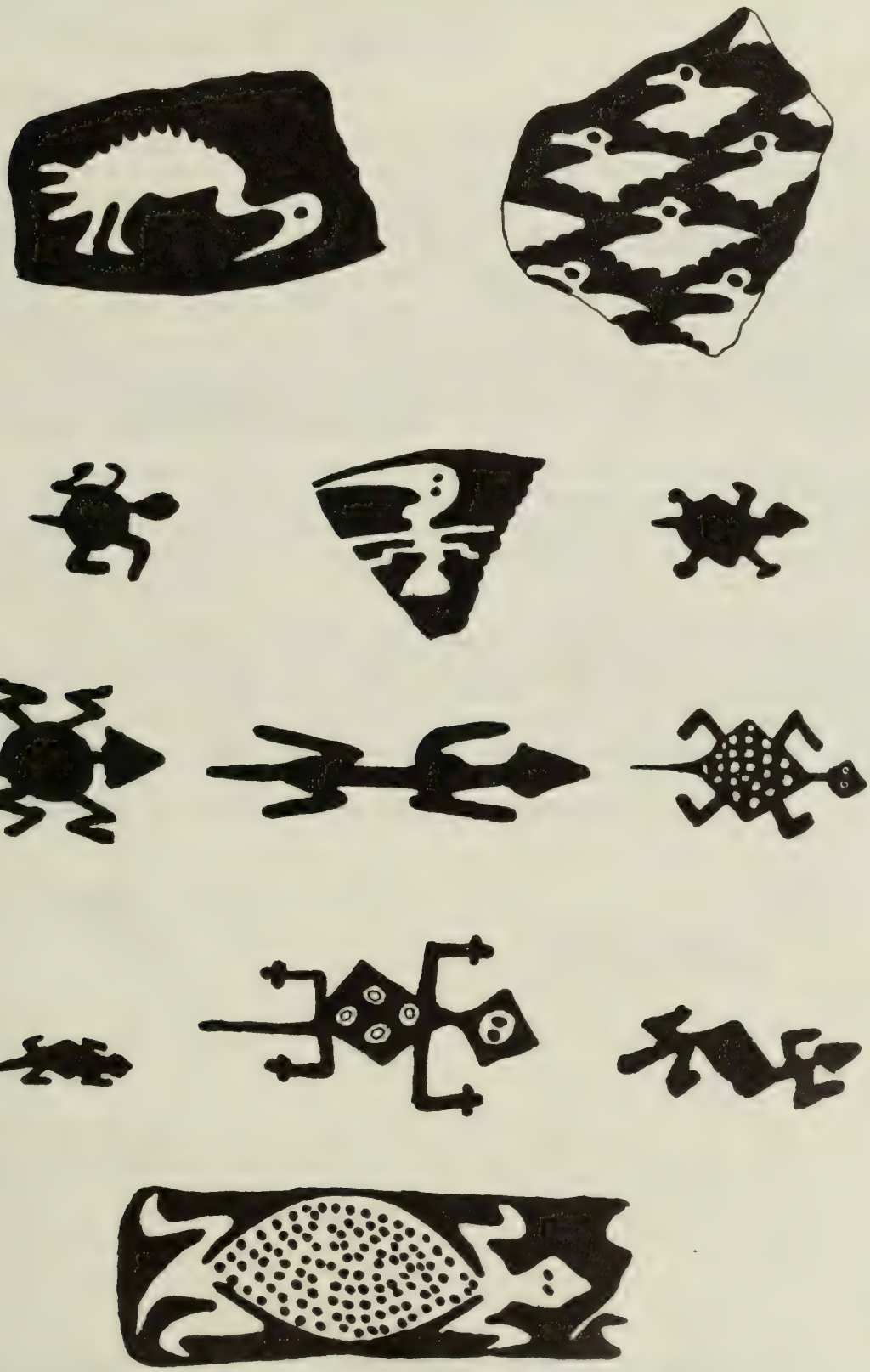














PROPOSED MUSEUM EXHIBITS PLAN FOR MONTEZUMA CASTLE

FOREWARD:

The thought of a museum plan for Montezuma Castle National Monument goes back a number of years. As early as September, 1932, Robert Rose, Park Naturalist, Southwestern Monuments, submitted to the Director a Museum Development Plan for Montezuma Castle National Monument. Three years later there appeared in the Supplement of the Southwestern Monuments Monthly Report for February (1935) a Discussion on a Montezuma Castle Museum by Earl Jackson, Custodian of Bandelier National Monument. With these discussions as a background and with the help of reports which have been written on the archeology of the Verde Valley, I am submitting for criticism an Educational Survey and Proposed Museum Exhibits Plan for Montezuma Castle National Monument.

The exhibit plans given here are not in finished form and imagination will have to be used in some instances to visualize what the completed display will look like. However, there is enough information given on each exhibit to stimulate a final plan to be worked up if these preliminary plans are approved.

This preliminary survey and plan is being sent to the personnel of Southwestern Monuments and others primarily interested in museum plans and in the archeology of the Verde Valley. It is hoped that all criticisms and suggestions will be made and forwarded to this office as soon as possible so that changes can be made in this proposed plan and the whole incorporated into a final draft to be used as working plans for museum development at Montezuma Castle National Monument.

Louis R. Caywood
Jr. Park Naturalist.

Coolidge, Arizona
March 31, 1936.

GENERAL EDUCATIONAL SURVEY

LOCATION AND ACCESSIBILITY:

Montezuma Castle National Monument is located in Yavapai County in the Verde Valley of central Arizona near the famous Jerome-Clarkdale mining district. It is reached by excellent major and minor highways. Going north from Phoenix one passes through Prescott, then over State Highway 79 through the mining towns of Jerome and Clarkdale reaching Montezuma Castle National Monument after a total of approximately 175 miles. From Flagstaff, which is on U. S. Highway 66, one travels by way of colorful Oak Creek Canyon, a distance of about 75 miles to the monument. There are other routes over less improved roads which visitors often take in the summer months when on camping trips or extended outings. One of these is either from Globe or Phoenix via Roosevelt Dam and the huge Tonto Natural Bridge near the small town of Pine and on to the monument.

ANNUAL TRAVEL:

The monument attracts year around travel and has averaged more than 14,000 visitors for the past three years. The heavy season is from June to September with an average of 1800 per month, During the remainder of the year registration is usually between 1000 and 1200 per month. Out of state travel runs well over 50% of the total. Length of time spent at the monument varies from one hour to three or four hours. With better educational facilities for interpretation this time should uniformly increase.

VISITOR CONTACTS AND EDUCATIONAL FACILITIES:

The study of visitor contacts made during 1935 shows that more than 30,000 contacts were made for the year ending December 31. With such a number of contacts it is necessary to maintain high standards for the entire year and under existing facilities this is not possible. The present so-called museum is only one small room used to house a portion of the display collection of artifacts for educational purposes. Open shelves, poor cases and bad lighting do not enhance the specimens on display.

EDUCATIONAL FEATURES:

Montezuma Castle National Monument, primarily archeological, is noted for the excellent example of prehistoric cliff-dwelling built in a cavity of the limestone cliff of Beaver Creek. C.W.A. excavations uncovered interesting house remains of both the cliff-dwelling and cavate types about 100 yards southwest of Montezuma Castle. One structure was called Castle A during the excavation work which was done on it. These newly uncovered house remains, the Montezuma Castle and a number of small cliff dwellings make up the main archeological features of the monument.

Other features of interest are the geology, the history, the ethnology and the flora and fauna of the region.

Geological features of the valley bring out the fact that what is now a fertile valley at one time was an enormous lake. The limestone stratum covering the valley floor was formed by deposits of sediments in a lake which finally found an outlet where the Verde River now runs south through narrow canyons to merge with the Salt River.

History, too, could be employed to make a fitting display at this monument. Espejo seems to have passed through a portion of the Verde Valley to look at some mines north and east of the present site of Prescott early in the year 1583. In 1599 two members of Onate's expedition, Farfan and Quesada, probably visited the same locality from the Tusayan region. Again in 1604 Onate and party passed through this country in search of gold and silver mines. American conquests began as early as 1836, but the main influx of pioneers did not come until 1860 when silver and gold mines discovered near Prescott drew large numbers of early settlers. Camp Verde, or Fort Verde as it was sometimes called, was first established in the spring of 1864 and was known as Camp Lincoln. It was moved five miles south, or to the present location in 1866, and named Camp Verde. It was abandoned as a military post in 1891. Indian conflicts and contacts were so numerous during this period that it might be well to work in the history and the ethnology of the region as a complete exhibit. The ethnology of both the Yavapai and Apache Indians, but especially the Yavapai, could be well worked in at this point.

A fitting exhibit portraying the flora and fauna of the region might well be put into the museum plan at this time to be worked out at a later date.

TRAILSIDE EXHIBITS:

A trailside exhibit of a model of the Montezuma Castle constructed to detail should be placed below the ruins for those who cannot climb the ladders to the ruin. This suggestion has been made several times before and should seriously be considered at this time. Of the total number who visit Montezuma Castle, only three-fifths climb the ladders and enter the ruin.

The model should be so made that it can be easily taken apart, that is, the front walls and the roofs hinged or set in slots so that they may be easily opened or removed to show the interior features of the rooms in addition to the exterior features. The model should be constructed at Montezuma Castle so the person doing the work will have access to the original at all times.

MUSEUM DEVELOPMENT PLAN

LOCATION OF BUILDINGS:

The location of the proposed museum building will be where the present parking area and ranger residence now are. Visitors will park their cars, register at the museum building and then conducted over a woodland nature trail to the area below Montezuma Castle and to the west of Montezuma Castle where additional cliff dwellings and some cavate dwellings are to be seen.

PURPOSE:

The Museum and Administration Building Unit should provide space for the following:

1. A lobby where visitors will register and assemble for ruins trips.
2. Offices for the custodian, ranger and visiting personnel.
3. Rooms for exhibits to portray the educational features of the region.
4. Storage and preparation rooms.
5. Library.
6. Rest rooms.
7. Basement for heating unit.
8. Dark room (in basement).

ARCHITECTURAL FEATURES:

The Pueblo style of architecture adopted according to Verde Valley prehistoric pueblos should be used for this unit.

Windowless museum rooms should be built, and the deep, electric lighted cases similar to those adopted for the Bandelier Museum with the movable backs should be used for best results.

Indirect ventilation should be provided with a hook-up to the heating unit for the intake so that in summer the same pipes may be used for conducting fresh air to the rooms, as were used in the winter for warm air. Outlets should be provided in the tops of the walls above the cases. No light should be able to pass through these outlets. Wide interior and exterior doors are necessary for proper movement of cases and material to insure mobility and the least possible damage to specimens. Door openings should have 40" clearance.

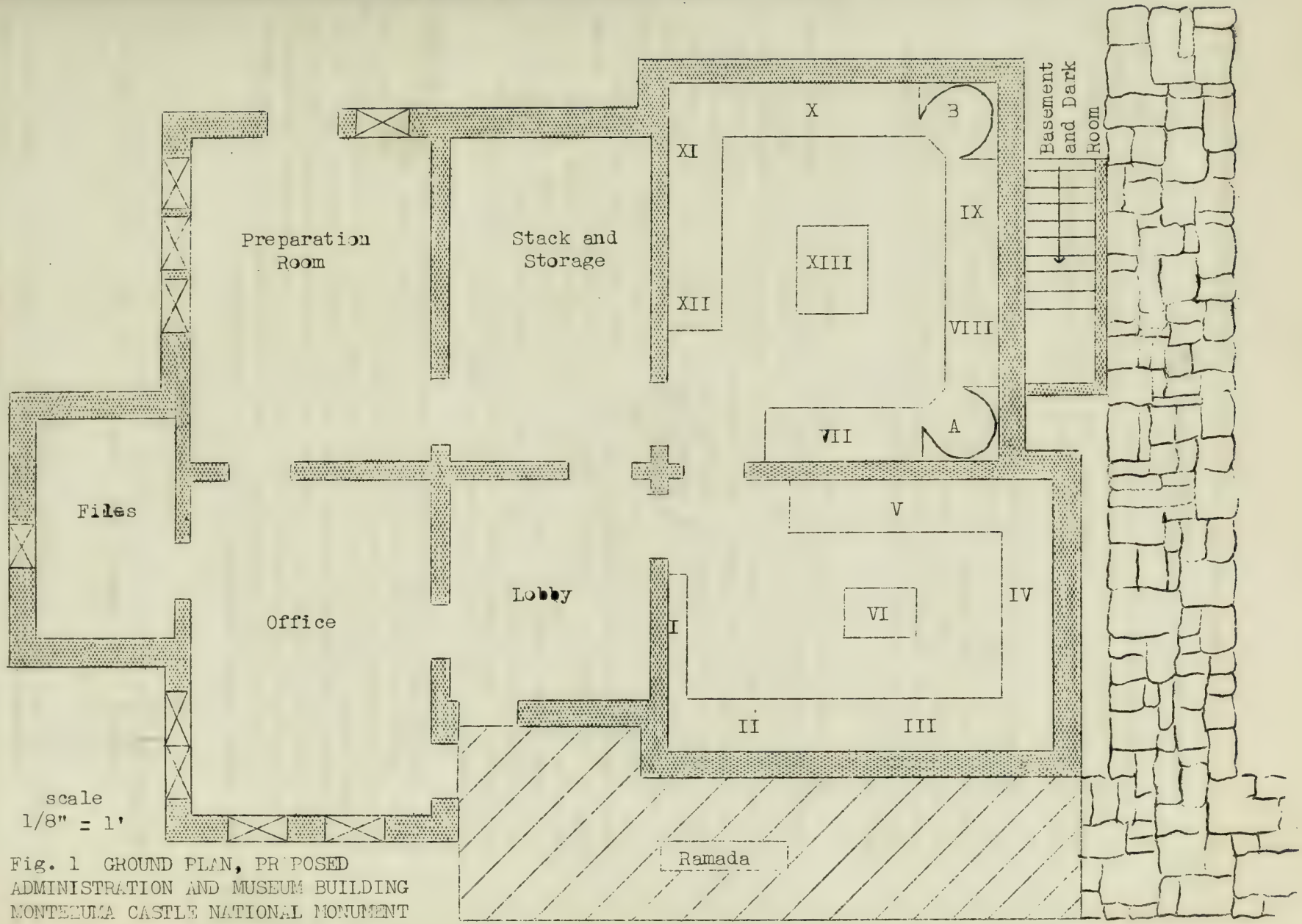


Fig. 1 GROUND PLAN, PROPOSED ADMINISTRATION AND MUSEUM BUILDING MONTEZUMA CASTLE NATIONAL MONUMENT

PRELIMINARY DISCUSSION

"Montezuma Castle" is a misnomer. It is not a castle in the sense of being the home or habitation of a single owner, but was a communally owned apartment house. Montezuma, the ruler of the Aztecs of Mexico City and vicinity, probably never knew that this structure existed.

The archeology of Montezuma Castle should be concerned primarily with the archeology of the Verde Valley in the vicinity of Montezuma Castle and with prehistoric culture groups bordering this region. To obtain a clear conception of what might have taken place in prehistoric times it is best briefly to outline the geography of the Verde Valley and show its influence on the peoples who chose to make their homes in this locality.

The Verde River heads in the region of Prescott, Arizona, and to the northeast of Prescott. Granite Creek and Chino Creek converge into what is called the Upper Verde. By the time the stream reaches the region known as the Middle Verde, in the valley where we find Montezuma Castle, its waters have been added to by a number of streams flowing from the north, some of which head in the region around the San Francisco Peaks north of Flagstaff, Arizona. Other streams flowing from the north (no flowing streams enter the Verde River from the south) come down canyons that have cut through the Mogollon Rim. The main streams from the north, that add water to the Verde, in the order that they join are Sycamore Canyon, Oak Creek and Beaver Creek on which Montezuma Castle is located. From the broad fertile valley of the Middle Verde the river flows through a narrow canyon, which it has cut to drain an immense lake which covered the entire Middle Verde Valley during past geologic time, according to geologists. The Lower Verde is the region from this narrow canyon to the confluence of the Verde River with the Salt River.

The valleys of the Verde River were once densely peopled with aboriginal tribes and the period of evident occupation covers several years or longer, according to information produced by excavations. Mountain and Plateau areas close around the Middle Verde Valley make access difficult from every side except through the canyons entering the valley. Beyond these mountain ranges and plateaus lie other culture areas where groups of prehistoric peoples once lived, and it is the interrelation between these groups and the peoples who lived in the Verde Valley which makes the archeology of Montezuma Castle so interesting.

BIBLIOGRAPHY

Barnes, Will C.
Arizona Place Names, Univ. ofAriz., Gen. Bul. No. 2, Vol. VI, No. 1, January 1, 1935.

Caywood, Louis R., and Spicer, Edward H.
Tuzigoot, the Excavation and Repair of a Ruin on the Verde River

Near Clarkdale, Arizona; Yavapai County Chamber of Commerce, Prescott, Arizona, December, 1935.

Coleman, L. V.
Manuel for Small Museums, New York, 1927.

Densmore, Frances
Yuman and Yaqui Music, Smithsonian Institution, Bureau of American Ethnology, Bul. 110, 1932.

Fewkes, Jesse Walter
Antiquities of the Upper Verde River and Walnut Creek Valleys, Arizona, Smithsonian Institution, Bureau of American Ethnology, Annual Report 28, 1906-07.

Gladwin, Harold S. and Winifred
An Archeological Survey of Verde Valley, The Madallion, Globe, Arizona, 1930.

Haury, E. W.
The Canyon Creek Ruin and the Cliff Dwellings of the Sierra Ancha, The Medallion, Globe, Arizona, 1934.

Hodge, F. W.
Handbook of American Indians, Smithsonian Institution, Bureau of American Ethnology, Bul. 30, 1910.

Hooton, E. A.
The Indians of Pecos Pueblo, Department of Archaeology, Phillips Academy, Andover, Mass., 1930.

King, C. R.
An Early Pueblo Burial Rich in Textiles from the Upper Verde Valley, 1933. MS

Jackson, Earl
Montezuma Castle Discussion, Supplement for Monthly Report, Southwestern Monuments, pp. 82-9, February, 1935.

Jackson, Earl and Pierce, Sarah L.
Report of Archeological Excavations at Montezuma Castle National Monument Under C.W.A. Program 1933-34. MS

Mearns, Edgar A., Assistant Surgeon, U.S.A.
Ancient Dwellings of the Rio Verde, Popular Science Monthly, October, 1890.

Morris, Earl
An Aboriginal Salt Mine at Camp Verde, Arizona, Amer. Mus. Nat. Hist., Anthropological Papers, Vol. XXX, No. III, pp. 75-97, New York, 1928.

Mindeleff, Cosmos
Aboriginal Remains in Verde Valley, Arizona, Smithsonian Institution, Bureau of American Ethnology, Annual Report 13, 1891-92.

Pinkley, Frank
Montezuma's Castle, 1928.

Rose, Robert
Montezuma Castle National Monument, Museum Development Plan, Report to the Director, National Park Service, Washington, D. C., September 1, 1932.

Wissler, Clark
The American Indian, Oxford University Press, 1922.

PROPOSED EXHIBITS

A museum plan and discussion for Montezuma Castle National Monument includes the following parts, arranged in their relative importance:

1. Archeology
2. Ethnology and History
3. Geology
4. Flora and Fauna

ARCHEOLOGY

Exhibit I. - Map case one foot deep.

A. Map of North America (Plate I) showing archeological culture areas in outline. The Southwest will be shown as a shaded area by colored hatching.

B. Map of Arizona (Plate I) showing topography, roads, towns, important ruins and National Monuments and Park areas.

Exhibit II. - Wall case three feet deep.

This exhibit will serve as an introduction to the type of people living in the Verde Valley during the time Montezuma Castle was built and inhabited.

The most common questions asked by visitors will be answered in a chart hung at eye level. The answers will be as concise as possible. Below this chart will be examples of the clothing worn by the prehistoric Indians. A number of good specimens are already in possession of the Park Service at the present Montezuma Castle Museum, and no doubt, others will be obtainable from local collec-

PLATE I

8'
RUINS IN ARIZONA
ARIZONA
ARCHEOLOGICAL AREAS OF NORTH AMERICA
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
EXHIBIT I

tions in the Verde Valley as a great deal of such material is available.

A drawing or water color similar to those made for the Aztec Ruins National Monument Museum, will show a prehistoric man and woman in typical dress. Below this will be a bust of a Pueblo Indian with a headdress resembling an example found in Hidden House in Sycamore Canyon in the Verde Valley. This headdress is now on display at the Arizona State Museum, University of Arizona, Tucson, Arizona. For other examples of this type of headdress see Hodge, Handbook of American Indians North of Mexico, B A E Bulletin 110, Plate 27. This headdress may have been typical of some of the older men of the pueblos.

A panel of Exhibit II will be devoted to the Physical Anthropology of the prehistoric Pueblo Indians of the Verde Valley. A great deal of material in excellent condition is available for this display. At montezuma Well burials are uncovered from which human bones in good state of preservation are taken and no doubt enough of these would be given to supplement what are already on hand at Montezuma Castle.

At the top of the panel will be a chart showing the comparative stature between these people and other prehistoric inhabitants of the Southwest, also modern American Indians and Asiatics as tabulated by Hooton and others. Below the stature chart will be displayed bones uncovered during excavations in the Verde Valley. Two pelves, one male and the other female, will prove interesting to a great many visitors. Long bones also, to show size and, if possible, pathology so that visitors will realize that we today have almost the identical diseases that these early people had.

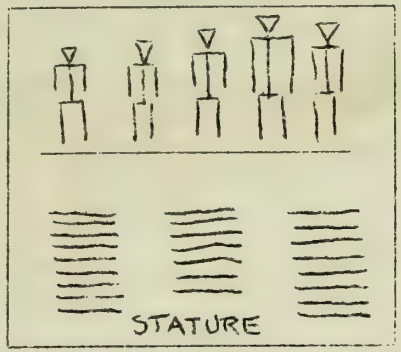
The last section of the display will be three skulls arranged in the various positions, ; i.e., norma frontalis, norma lateralis and norma basilaris. These to be placed on small upright stands. One of these, preferably the norma frontalis, will show the green facial bones and mandible, so commonly found in burials in this region. Undoubtedly before burial the face was painted with copper oxide and penetration into the facial bones took place during decomposition of the flesh.

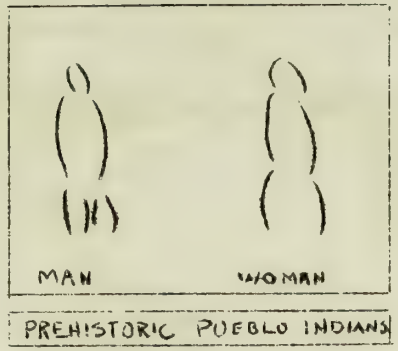
Exhibit III. - Wall case three feet deep.

A. At the right of the case and taking up about one quarter of the first exhibit, will be a panel containing a History Chart of the Verde Valley with a copy of an old print of Montezuma Castle above and a copy of an old map of the Verde Valley below. These two copies can be made from prints in an article by Dr. E. A. Mearns entitled, Ancient Dwellings of the Rio Verde Valley, in the October, 1890, issue of Popular Science Monthly.

The reason for having the History Chart at this particular spot is to act as an introduction to archeological and ethnological

8'



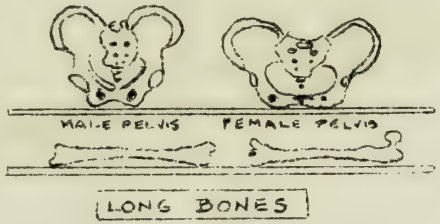


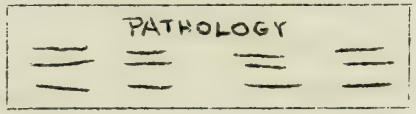
Who were these people?

Where did they come from?

When and where did they go?

Why did they go?







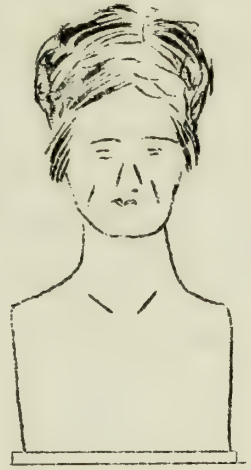










EXHIBIT II

PLATE II

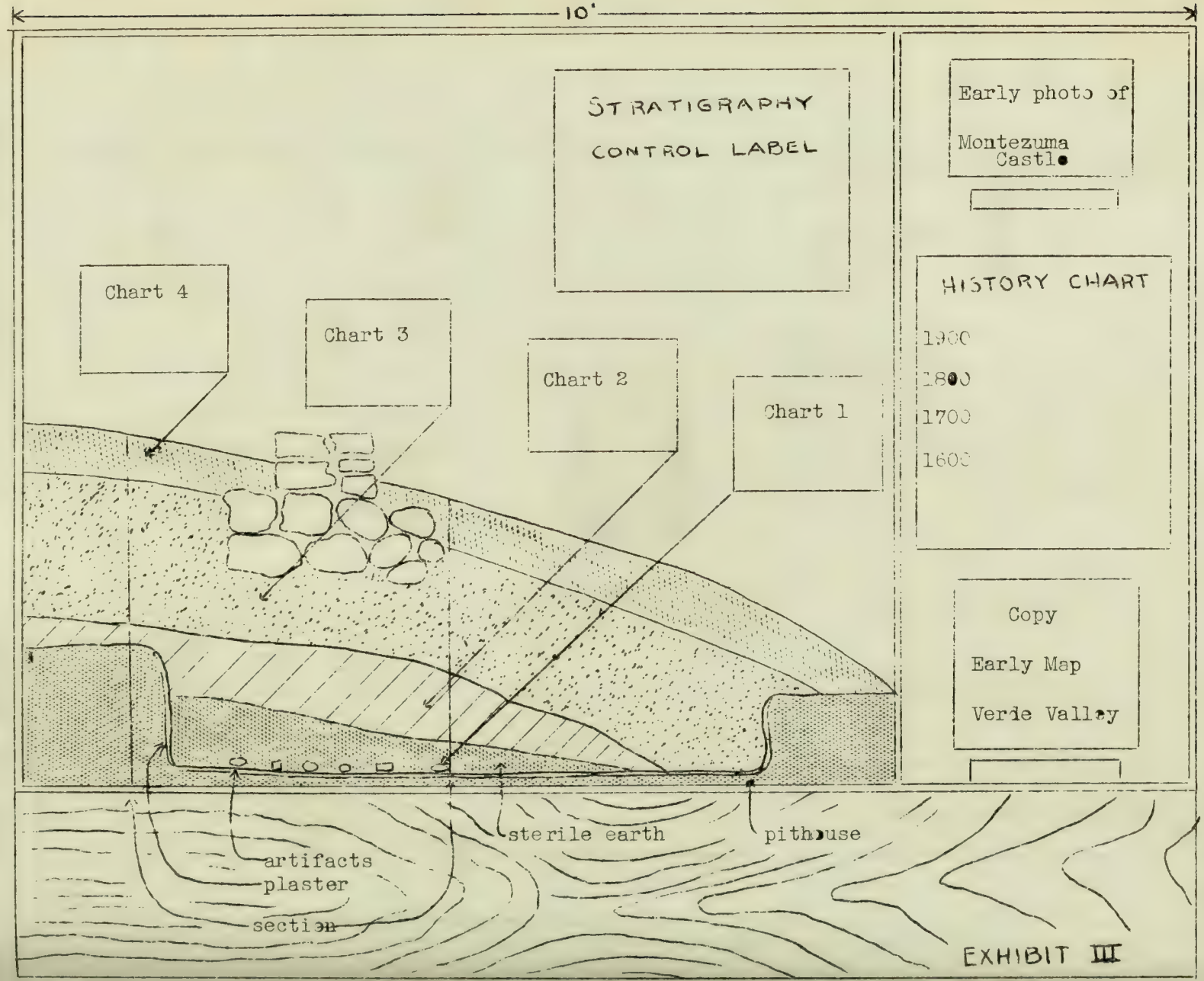

10'
STRATIGRAPHY
CONTROL LABEL
Early photo of
Montezuma
Castle
HISTORY CHART
1900
1800
1700
1600
Chart 4
Chart 3
Chart 2
Chart 1
Copy
Early Map
Verde Valley
artifacts
plaster
section
sterile earth
pithouse
EXHIBIT III

PLATE III

investigation. It will contain information pertaining to the first Europeans who came into the valley, why they came and what they found. As the chart goes from the earliest to the latest, reading from bottom to top, it will be much like the stratigraphy chart which follows. It will also give complete information on archeological surveys and excavations, and will be the introduction to the results of archeological work which will be shown in succeeding exhibits.

B. The second section of Exhibit III, will be a stratigraphy similar to the one at Aztec Ruins National Monument but in addition to stratigraphy will tell why tree rings are not important in dating ruins in this region, and will show how ruins are relatively dated by sherds. House types will also be mentioned in the labels explaining the stratigraphy. Approximate dates of occupation in the valley will also be given. For details see Figures, 2, 3, 4 and 5.

DETAILS OF EXHIBIT III

Stratigraphy Control Label:

Stratigraphy, or the study of deposits of trash, has been most important in the working out of the development of peoples. It can be done today by going out to the city dump grounds and studying the deposits of trash. If the city is reasonably old and the earliest part of the dump is found and dug into, all kinds of queer articles of the gay 90's would probably come to light. There would be wagon parts, the remains of bustles, corset stays, etc.

The trash of the early 20th century was dumped on top of the things just mentioned and here among the ashes and dirt would be found parts of early automobiles, etc. Trash of the 1920's would be on top of this and so on until the trash of yesterday would be the last deposit.

Trash mounds of the prehistoric Indians are even better than those of today because the people usually threw their rubbish outside their front doors. When the house was finally abandoned or burned down, it fell into ruins and a new house was built on top of the remains of the old and its rubbish pile. In this manner deposits or accumulations resulted, sometimes to considerable depths, and if carefully excavated a true picture of the development of the people who lived there can be worked out. Such an excavation is called a stratigraphic study. The section below is an idealized cut through an old ruin and should be read from the bottom to the top to be properly interpreted.

Chart 1:

In the lowest stratum (Greek meaning layer) there is found a pit and the plastered walls of a pithouse (see drawing), the earliest house

type of these people when they passed from the stage of wandering hunters to that of a sedentary agricultural-hunting life. On the floor of this crude house there is found charred corn and several pottery fragments (sherds) showing that they were farmers and made pottery vessels.

Charcoal is found in large quantities on the floor. This may mean that the house was fired or caught fire and abandoned. The charcoal cannot be dated by the Douglass Method of Tree Ring Dating because the original wood was sycamore, cottonwood and juniper---none of which can be dated. Only pin, Douglas fir and pinyon can be dated. No ruin in the Verde Valley has been dated except Tuzigoot because of the lack of datable material.

The dates generally given for this early period when people were living in pithouses is before 900 A.D.

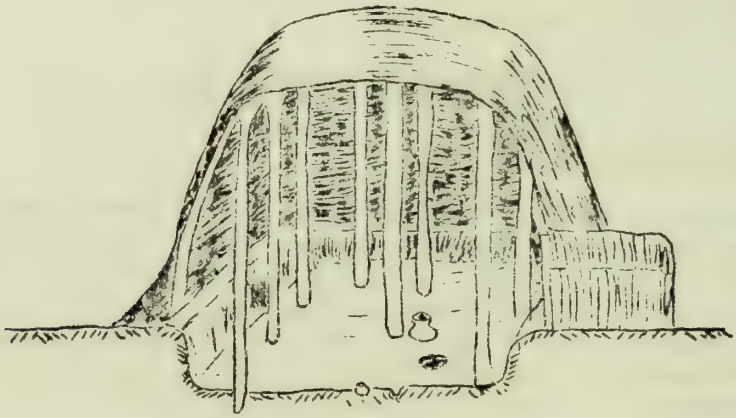


FIGURE 2----PIT HOUSE

EARLIEST TYPE OF DWELLING FOUND IN THE VERDE VALLEY

Chart 2:

In the next layer of debris there are found sherds which are different from the sherds found on the pithouse floor. Although no house remains are shown it is know from other locations that the house was a crude building of only one or two rooms built on the ground level (see drawing). The association between sherds and house types is a very common method of determining the relative age of prehistoric ruins in the Southwest. In the region around Flagstaff, Arizona, where yellow pine grows and was used for building purposes in a house type which gave a certain date there was found on the floor of the old house a

certain kind pottery. In a ruin in the Verde Valley which cannot be dated from the old charred beams the same kind of pottery was found; so it is believed that the pottery, which is identical, was made at the same time and a relative date is given to the Verde Valley house type. The approximate dates for this period would be between 900 and 1050 A.D.

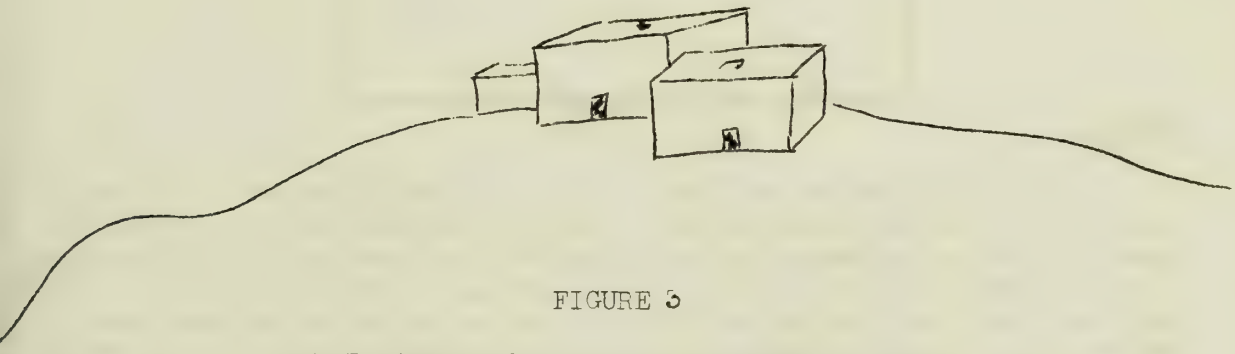


FIGURE 3

FIRST HOUSES TO BE BUILT ON GROUND LEVEL
THE BEGINNING OF THE HUGE PUEBLOS OF LATER TIMES

Chart 3:

In the third stratum from the bottom there is more evidence of human occupation than before in the form of more sherds, more ashes from their fires and more bone tools and bone splinters. A much larger population might have existed here at that time.

The evidence of walls are plainly shown, and are made of rough and irregular rocks. At this time the houses were built in pueblos of many rooms or in multi-storied cliff-dwellings.

The people at this state of development had reached a rather high degree of civilization, comparatively speaking, but still there is no evidence of a definite religious structure, such as a kiva, found in the Verde Valley. Further to the north are found many kivas in villages and further to the south in the Hohokam country no kivas are found. In the Verde Valley midway between the areas with and without kivas there are none found. Does this point to the fact that the people were from the south?

The relative dates for this period are between 1050 and 1300 A.D.

PHOTOGRAPH OF MONTEZUMA CASTLE

Chart 4:

In the top stratum are found as much or more evidence of occupation as in the previous stratum. There is a marked change in pottery type. A new yellow ware with brown decoration (Jeddito Black-on-yellow) is found which has its origin to the north and east in the Jeddito Valley. This was the first indication that led archeologists to believe such pottery was traded in rather than made here. Now it is quite generally believed that almost all of the decorated pottery found at Montezuma Castle and Tuzigoot was trade ware.

This last period dates after 1300 A.D. How long the people lived in the region after that time is not known. All of the large pueblos and cliff-dwellings were occupied during this period.

PHOTOGRAPH OF TUZIGOOT

Exhibit IV

A. Pottery Chronology.

A pottery chronology for the Verde Valley will be made up from data gathered at Montezuma Castle National Monument during the C. W. A. excavation and research, from Tuzigoot and from the studies of pottery of northern Arizona by the Museum of Northern Arizona. Typical sherds are to be used in the chronology and if

PLATE IV

EXHIBIT IV
P IV
P III
P II
P I
BM III
NAME
NAME
NAME
NAME
POTTERY CHRONOLOGY
NORTH CENTRAL ARIZONA
Little Colorado River
FLAGSTAFF
MONTEZUMA CASTLE NATIONAL MONUMENT
Verde River
PRESCOTT
PHOENIX
Salt River

possible photographs of type vessels will be used. On the right of the chronology will be a relative age sequence made up according to the best knowledge that we now have.

B. Map of north central Arizona.

On this map will be shown the culture groups of the area under consideration. These groups will be shown in colored shaded areas with any overlapping that we know exists. The map will show all topographic features and ruins of the Verde Valley and surrounding regions. Also possible trade routes will be shown in dotted lines on the map. As there is a salt mine in the valley near Camp Verde which we know was used by the prehistoric Indians we are almost positive that this commodity was used in barter. Also due to climatic conditions it was possible to raise cotton in the Verde Valley and because of the abundance of textiles we think that cotton and cotton goods were used for barter. In turn we find that most of the pottery found in the region is trade ware; so no doubt these peoples used their natural resources and products to trade for objects from other regions. All of these points will be brought out in the exhibit.

EXHIBIT V. - Wall case.

Hunting in the Verde Valley

From the number of animal and bird bones found in the debris and in the room fills during excavation, there must have been a great deal of hunting activity among the Verde Valley pueblos.

Two hunting scenes, one showing the pueblo men hunting deer, and the other portraying them hunting ducks on the river, will be used as top pieces for the case. The deer scene will show the colorful redrock country to the north of the Verde River. The other will be a typical Verde River scene with the river bordered by tall reeds, which grew there in prehistoric times. These reeds are now almost extinct, but at that time were very plentiful and were the thatch used in roofing the rooms.

Below these two large pictures, will be pen and ink drawings of some of the animals and birds which were hunted and used for food and for other purposes. Below each picture will be the bone from which identification was made.

Below these pictures of birds and animals will be labels telling; (1) what the Verde Valley must have been like when inhabited by the Indians, (2) the uses made of the animals and birds - food, clothing, ornaments and utility, (3) why the Verde Valley is barren today. In the second chart, reference will be made to the fact that no turkey bones have been found in the Verde Valley.

PLATE V

HUNTING DEER IN THE RED ROCKS
HUNTING DUCK ON THE VERDE RIVER
BEAR
BADGER
BEAVER
DEER
RACCOON
MALLARD
MACAW
GOOSE
WOOD IBIS
THE VERDE VALLEY IN PREHISTORIC TIMES
USES OF ANIMALS AND BIRDS
WHY THE VERDE VALLEY IS BARREN TODAY
8'
EXHIBIT V

A second section of about four feet of case space will show weapons used for hunting in prehistoric times.

Exhibit VI. - Center Case.

Bone and Stone Tools and Technology.

This exhibit will show representative types of bone tools, and the bones they were made from with accompanying explanation telling how they were made.

Representative stone tools will also be shown and an explanation given on how they are made and from what material.

In the text on the labels, comparisons will be made between bone and stone implements of adjoining culture areas.

Exhibit VII. - Wall Case.

Farming in the Verde Valley:

For intensive farming on small plots, no doubt as great a population could have subsisted per total area in the Verde Valley as in any other section of the Southwest. This is further borne out by the great number of large pueblos bordering the Verde River.

Irrigation must have been employed, but not in such tremendous projects as the Hohokam employed in the Salt and Gila valleys to the south. There is evidence of a small irrigation canal leading from Montezuma Well toward Montezuma Castle. Water could have been brought out of the Verde River by the use of dikes and ditches, which have long since disappeared.

The agricultural products raised here were as numberous as those raised by the Hohokam. Cotton must have been an important crop in addition to the food staples, corn, beans and squash.

The exhibit on farming will bring out the points mentioned above in a large label. There will be enlarged photographs of the old canal near Montezuma Well and of Montezuma Well itself.

Examples of prehistoric foods will be shown in jars at the bottom of the case.

Prehistoric farming implements will complete the exhibit. The axe, planting stick, hoe and spade, were the most important tools used in clearing and cultivating the land.

Following Exhibit VII will be a diorama (A), showing a typical farming scene in the Verde Valley.

PLATE VI

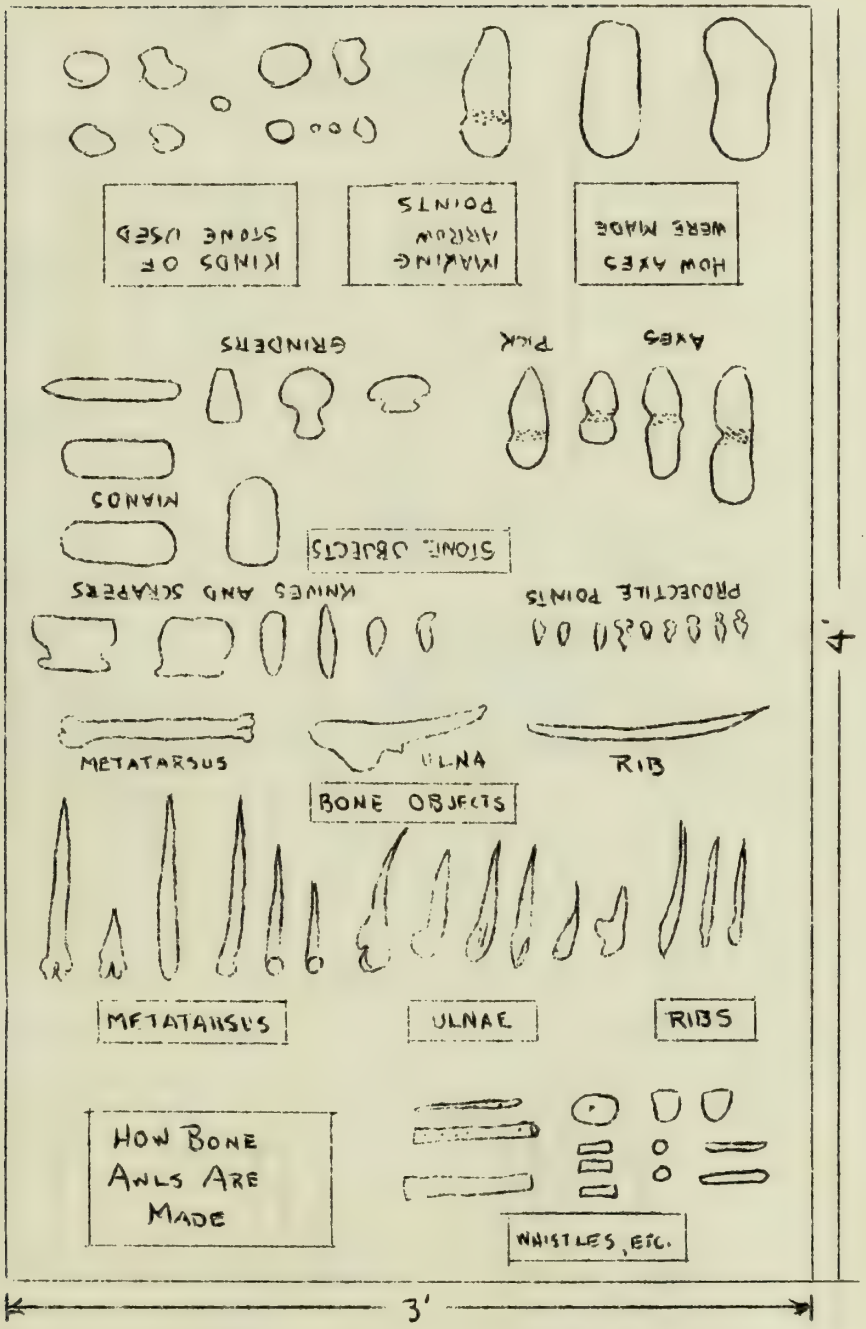
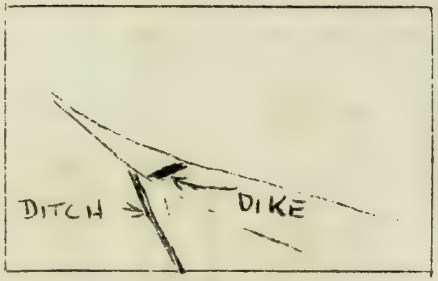
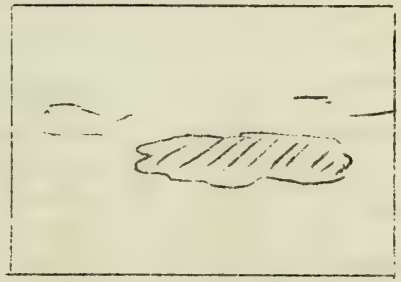


EXHIBIT VI — CENTER CASE



Modern Irrigation on the Verde

Farming in the Verde Valley



MONTEZUMA WELL



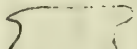
OLD CANAL



Planting Stick



Axe Used in Clearing Land

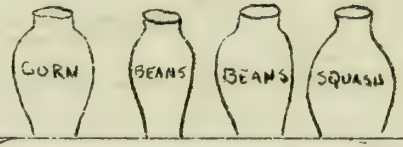


HOE



Spade

FOODS



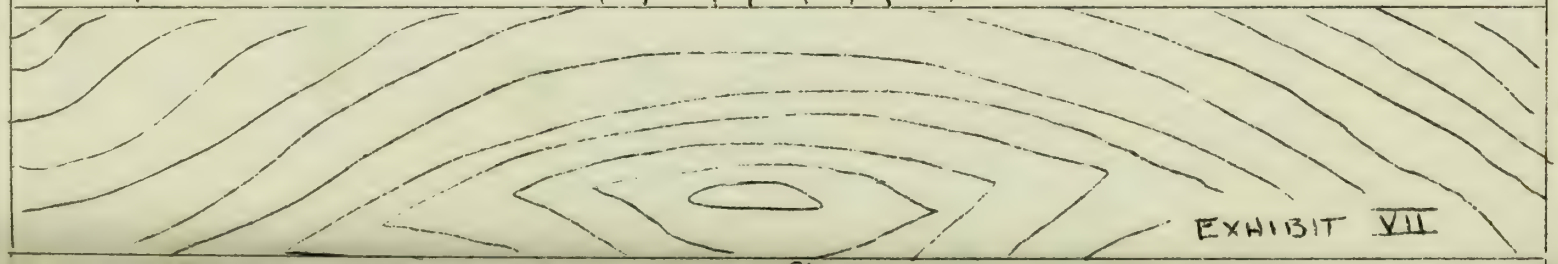


PLATE VII

PLATE VIII

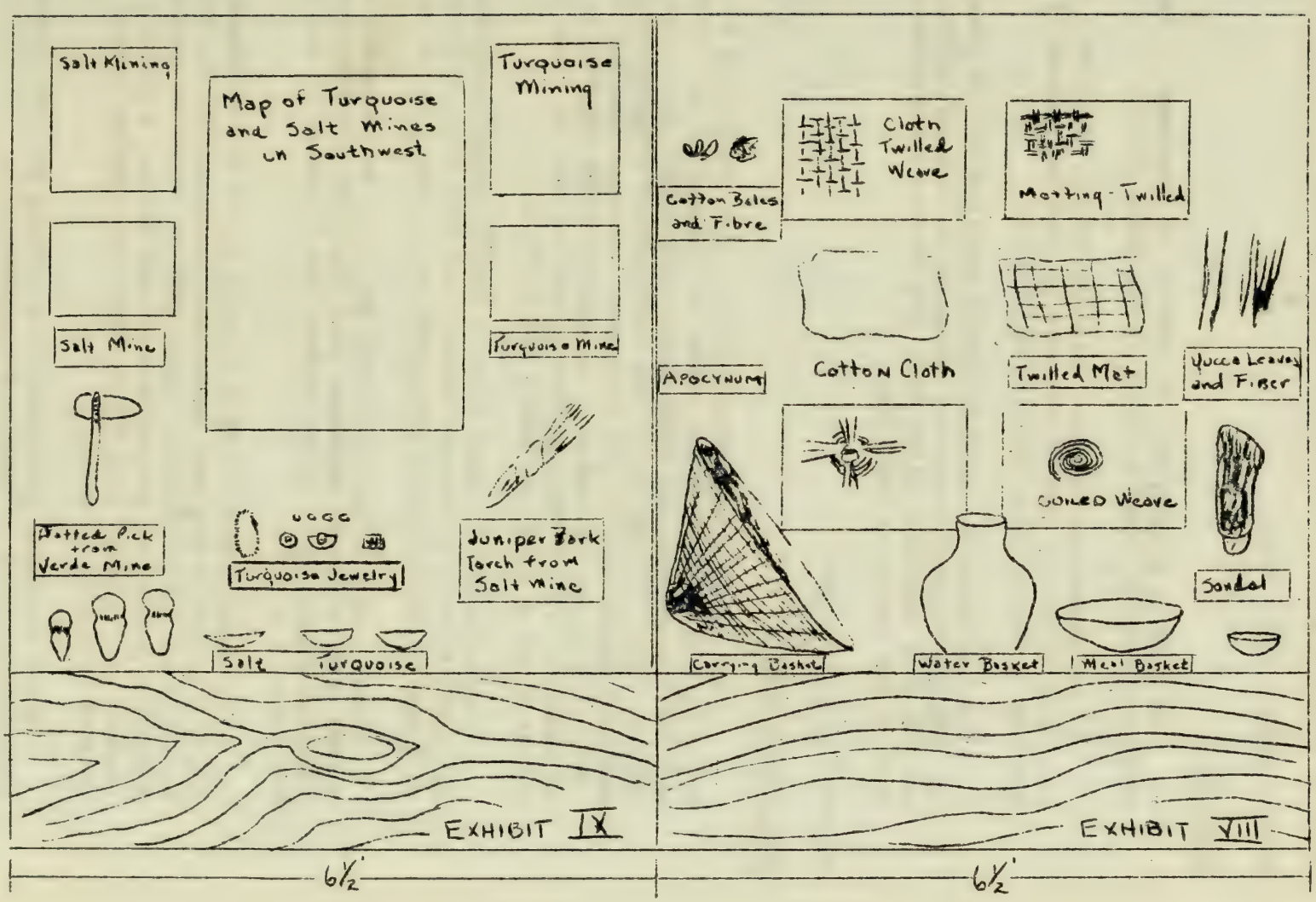

Salt Mining
Map of Turquoise and Salt Mines in Southwest
Turquoise Mining
Salt Mine
Turquoise Mine
Potted Pick from Verde Mine
Turquoise Jewelry
Juniper Bark Torch from Salt Mine
Salt
Turquoise
EXHIBIT IX
6½'
Cotton Bales and Fibre
Cloth Twilled Weave
Matting - Twilled
Apocynum
Cotton Cloth
Twilled Mat
Yucca Leaves and Fiber
Coiled Weave
Sandal
Carrying Basket
Water Basket
Meal Basket
EXHIBIT VIII
6½'

Exhibit VIII. - Wall Case.

Textiles:

The textile display will be made up of specimens of basketry, matting and cloth found in ruins in the Verde Valley.

To supplement and explain these specimens, there will be drawings mounted in the back of the case to show the methods of weaving employed in the various textiles on display.

The raw materials used in making textiles will be shown and the methods of preparing these materials will be explained. Cotton was the most important fibre used, but yucca and apocynum were also used in the making of textiles.

Exhibit IX. - Wall Case.

Prehistoric Mining:

In the past it was erroneously thought, especially by the early Spanish Conquistadores, that the Indians of the Southwest and their ancestors, the prehistoric inhabitants had mined precious metals. This thought led to the organization of marvellously equipped expeditions to the Southwest. Coronado was the first to lose his fortune, and return a broken but wiser man. In all his wanderings, even to Gran Quivira in what is now the state of Kansas, not an ounce of precious metals did he find.

Turquoise was a common form of jewelry among the Indians and was mined by them in various places, but this did not interest the gold greedy Spanish whose retrospect was on the gold of the Incas.

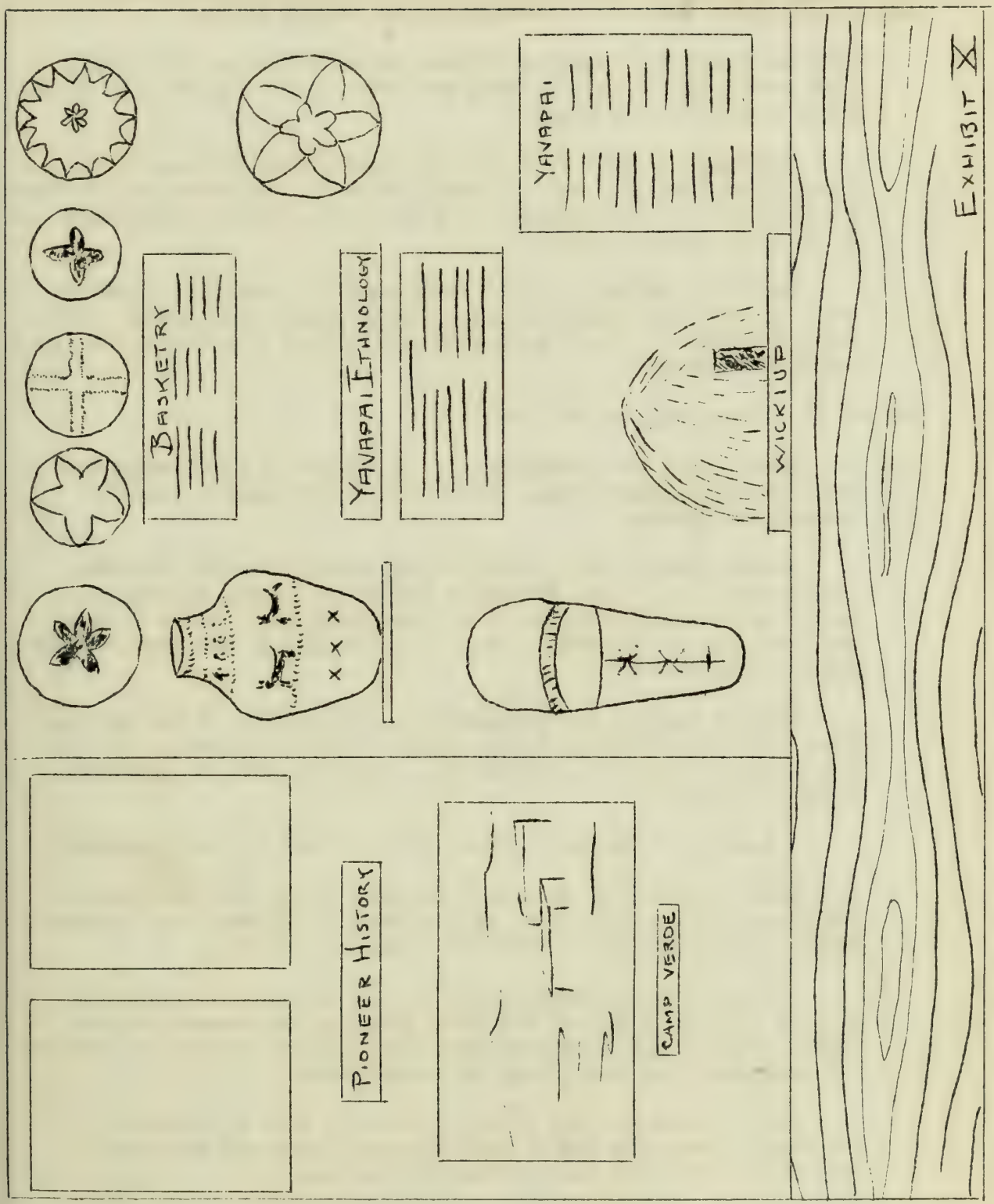
Today, many of the uninformed who visit ruins cannot be convinced even by strong arguments that there are not treasures of precious metals still buried beneath the floors or in the walls of the ruins.

This exhibit will contain a large map of the Southwest, showing all turquoise and salt mines that are known to have been used by the prehistoric Indians. There will be labels on both salt and turquoise mining and photographs of both mines. A picture of the present salt mine at Camp Verde, which was originally used by the Indians will also be shown.

Below the maps, photographs and labels, will be implements used in the mining of salt and turquoise.

Picks used in salt mining are numerous in the Verde Valley and will be part of the display. If possible, one hafted example

PLATE IX


EXHIBIT IX
YAVAPAI
BASKETRY
YAVAPAI ETHNOLOGY
WICKIUP
PIONEER HISTORY
CAMP VERDE

will be obtained or made up for exhibition purposes. A juniper bark torch will be made to show what was used for lighting purposes while working in the mine.

Specimens of salt from the salt mine and raw turquoise from a turquoise mine will be on a small stand at the bottom of the case. Above these, will be examples of prehistoric jewelry; necklaces, inlay work, pendants, etc.

Following Exhibit IX will be Diorama B - depicting a mining scene in the Camp Verde salt mine during prehistoric times. Several Indians will be at work with one holding a torch for the others to work by.

Exhibit X. - Ethnology and History:

A. Ethnology in the Verde Valley is limited to the Yavapai who are a Yuman speaking tribe. Culturally, they seem to resemble closely the Apache.

As the Yavapai are limited to the region of north central Arizona with only a few groups of importance today, and these mainly in the Verde Valley, it is most important to have a complete exhibit on the ethnology of these people at Montezuma Castle National Monument.

Yavapai baskets are considered among the best of the various kinds of baskets made by Indian tribes of the Southwest. As good a collection as can be obtained will be shown with any other objects of interest.

A model of a Yavapai wickiup will be made for this exhibit.

Labels telling of Yavapai life and customs will be printed and placed on the back panel of the case. Photographs of Yavapai Indians in old dress, if obtainable, will be shown.

B. Following the ethnology exhibit, but part of the same case will be a brief sketch of the first American settlements in the Verde Valley, and the difficulties that existed between the Indians and Americans when Camp Verde was established.

Such information can still be obtained from old-timers in the region, from the Indian Agent at Camp Verde and from the Arizona Historical Museum at Prescott, Arizona.

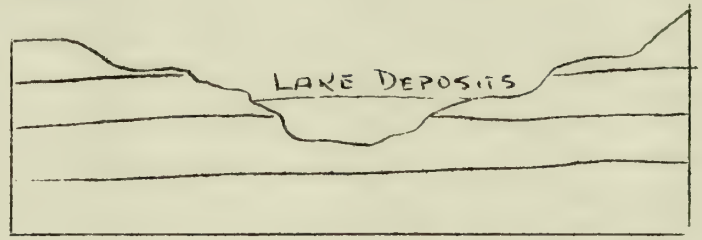
THE ORIGIN OF THE LIMESTONE CLIFFS

PHOTO OF BEAVER CREEK; WHITE CLIFFS AND CASTLE

LABEL

PHOTO OF SALT MINE

LABEL



GEOLOGIC CROSS-SECTION

LAVA NOTCH ON VERDE RIVER

BEAVER CREEK MEANDERS

MAP OF BEAVER CREEK REGION SHOWING EXTENT OF ANCIENT LAKE

COLORED AREA COVERED BY LAKE

MONTEZUMA WELL

REDWALL LIMESTONE PHOTO

ROCKS OF THE MONTEZUMA REGION

VERDE LIMESTONE

REDWALL LIMESTONE

LAVA FROM GAP

SUPAI FORMATION



ROCKS USED IN MAKING STONE TOOLS

EXHIBIT XI

PLATE X

Exhibit VII.

Although Montezuma Castle is not a geologic monument there is a great deal which should be told of the geology of the Verde Valley.

During tertiary times or before a neck of lava dammed the lower end of the valley and made a huge lake out of what is now the Verde Valley. Thick deposits of limestone were deposited in tertiary times. There limestones were laid down over redwall limestone.

The lake outlet finally cut through the lava which dammed it and the lake was drained. Since the time of draining the stream (Verde River) has cut down through the Verde limestone some 80 - 100 feet.

Exhibit XII. - Wall Case.

Flora and Fauna

The contents of this case is problematical at present, and could only be made up after a thorough investigation of the region around Montezuma Castle is made.

Exhibit XIII. - Center Case.

This will be a relief model of the Verde Valley, made according to scale and painted to resemble the rock formations of the valley; i.e., the Redrock country red, the Verde Valley limestone a pinkish buff, the porphory of the Black Mountain a dull red, etc.

****

SCENIC S. UTAH

A recent radio talk by Zeke Johnson

Friends:-

When it's spring time in the Rockies, and the birds begin to sing, men's hearts year for the wide out-of-doors, for the mountain ranges and the canyons, for the beautiful parks and monuments. Just to rest! to look! and listen.

Then the thought comes, where shall we go?

Let me tell the Radio Audience, that I have a trip in mind, that will please both old and young. Let's leave Salt Lake and start for San Juan County, Utah, a distance of 325 miles, the land of charm and beauty, take highway #50 via Price, Greenriver to within three miles of

Thompson Springs, then turn due south on highway #47, where you will cross the Colorado River at Moab. Here you will see the high red ledges in all their splendor, towering some 1,500 feet above the level of the valley. You will also see where the Silvery Colorado enters the Box Canyons never to come out again til it has flowed through Cataract, Glen, Marble, and the Ground Canyons, to be impounded in the lake at the great Boulder Dam.

Then you look to the east and see the grand La Sall Mountain with its peaks towering high above timber line, the second highest mountain in the state. Sixty-five miles brings you to the town of Monticello. On the way you pass by the Looking Glass Rock, and just to the left you see a beautiful arch. You will be amazed at the coloring in the ledges. Twenty-five miles southwest from Monticello, under the south rim of the Blue Mountain, you arrive at Blanding.

At this point ask for Zeke Johnson, Custodian of Natural Bridges. If he is not in town, he will be at the Monument. Any of the attendants at service stations or stores will direct you, and tell you to fill your tanks with gas. Then go west over a 50-mile dirt mountain road not too good, not too bad; - just a crooked slow road but you won't mind the two and a half hours it takes to get to the Bridges, as you will be immensely interested in every mile.

The first 23 miles are through a forest of Pinyon Pine and Juniper, crossing West Water Canyon, Brushy Basin and Cottonwood. After you begin to ascend the Elk Mountain, and you see the sign, "Goblet of Venice," be sure and walk the 300 yards, and see the most beautiful specimen of wind erosion ever seen by man. Just a big red rose standing 13 feet high (five tones of rock are estimated in it) and standing on a 16-inch base. You will need your cameras and plenty of films. Five miles farther puts you up into a beautiful forest of yellow Pine and Aspen. You will be thrilled every moment as you ride through this wonderful grove of trees that almost tower to the sky, and at an altitude of eight to nine thousand feet.

Through this beautiful forest at the left you will look into arch canyon. Just stop and walk 25 yards, have your field glasses ready to look out at the four corners of Utah, Colorado, New Mexico and Arizona and see as far as the eye can reach into all four states. Then drive on and as you approach the highest divide between the Bears Ears, stop and look at the great panorama before you, to south, east and west, many mountains and beautiful Monument Valley in the distance. Fifteen miles down the mountain and through a forest of Pinyon and Juniper brings you to the Great Natural Bridges.

The Owanchomo (Rock Mount Bridge), so called from the conical rock mound on it, is probably the oldest, for it has been carved and chiseled by erosion until its span is comparatively a narrow strip of rock. Viewed

at a distance, one is surprised that it supports its own weight. It is the smallest of the three bridges, and yet it has a span of 200 feet, being 35 feet wide on top but only 10 feet thick in the center. It rises 108 feet above the stream bed of a short, unnamed canyon at its confluence with Armstrong Canyon. This is locally known as the Edwin Bridge.

Three miles down Armstrong Canyon, at its junction with White Canyon, the Kachina or, as it is better known, Caroline Bridge, is reached. A symbol carved on this bridge recognized as that of the Kachina, the sacred dancers of the Hopi Indians, gives it its name. This is the most massive of the bridges. Rough hewn, it gives an impression of great weight and strength. The huge fragments of rocks and piles of sand and gravel in the canyon in the immediate vicinity are in harmony with the bridge, as if the master workman, not yet having finished his work, had not thought it necessary to clear away the debris. This bridge has a span of 186 feet, a width of 49 feet, and a thickness of 107 feet at its smallest part. It rises to a height of 205 feet above the stream bed.

About 2½ miles above the Kachina in White Canyon is the Sipapu, the Portal of Life. All Pueblo Indians believe they come into this world from a lower world through a hole or opening, called by the Hopi "Sipapu." After death, they return through the opening to the lower world, where they remain a period before going to the sky to become "Rain Gods." The Sipapu, or as it is also know, Augusta Bridge, is the largest. It has a span of 261 feet, is 40 feet wide, and 65 feet thick at its smallest part, and rises to a height of 222 feet above the stream bed. It has been so carved and smoothed and is so beautifully proportioned that it is difficult to realize its great size. Nature has carried out the general scheme by providing a more beautiful setting than in the case of the other two bridges.

There are numerous ruins of cliff dwellings in the vicinity of the bridges perched in the canyon walls in almost inaccessible places.

The natural bridges are the result of stream erosion in an elevated region. Doubtless hundreds of similar bridges have been formed and destroyed in past ages, and many more will be made and later destroyed in the ages to come.

Beds and meals are available at the Custodian's camp at the EDwin Bridge for those who wish to spend additional time in this wonderful region.

South of Blanding are such scenic attractions as Monument Valley, the Goosenecks of the San Juan River, the Navajo reservation, Hope Villages, and a return trip by the way of Lees Ferry Bridge to Bryce and Zion Canyons and Cedar Breaks.

Roads will be open by May 1 this year and I will be looking down the trail ready to welcome you to San Juan County and the Natural Bridges National Monument.

****

TABIRA'S WATER SUPPLY

(Ed. Note: In response to several recent allusions to the source of water during ancient days at Tabira, now Gran Quivira National Monument, Claf T. Hagen, acting chief, Western Division of Historic Sites and Buildings, gathered the following quotations which will be of interest to the field.

Mr. Hagen notes "Although descriptions by persons who visited Gran Quivira about a century ago may not provide the correct solutions, their statements contain pertinent suggestions which it seems deserve thorough investigations on the ground.")

"Benjamin David Wilson's Observations on Early Days in California and New Mexico." Edited by Arthur Woodward. Printed in the Annual Publication of the Historical Society of Southern California, Los Angeles, 1934, pages 95-96.

".....I wish to revert to my second Gila expedition, in the winter of 1835 - 6.

"Myself, and expedition, six men all told, once found ourselves absolutely without anything to eat, the only result to us was great weakness. On the evening of the sixth day getting off our mules, we felt so weak that we became very much alarmed about our condition, so I had no other recourse but to shoot my faithful mule, that I had ridden over a thousand miles, it being the only animal that showed any flesh. I feel sorry about that mule yet, the killing of which occurred some forty-two years ago. On our return as before mentioned to intercept the Mission caravan, after crossing the Del Norte, at the head of Jornada, going eastward to the River Pecos, we had the misfortune to find no water till the fifth day at night. On the fourth day, crossing an arid sandy plain leading North to South between the two parallel mountains, we saw to the North of us in the midst of this plain a large building, which encouraged us to believe that our water trouble was at an end; we went to the building and found it to be a large Church. On the northern side of the building saw evidences that there had been on that site a very large town, the Church itself was built of stone, and stood almost in a perfect state of preservation, while all the other buildings had decayed. We spent the whole day looking for water without any success. Just at night I discovered on the eastern side what satisfied me were the remnants of a concrete aqueduct. Camped there that night, next morning endeavored to trace the aqueduct, which led easterly to a mountain range. Spent the whole day in tracing it, to

ascertain which was the gorge it entered, believing we should find water there. Our hopes were gratified, and our terrific sufferings ended. I had already had the experience of six days without food, and five without water, and state that the suffering caused by the former bears no comparison with that of the latter. No living man unless he has had the opportunity of feeling it, or seeing it with his own eyes, could realize how much flesh a man may lose in five days without water. Every joint in our bodies ached, our eyes sunk in our heads as if we had been dead a week, and the bones seemed to be pushing through the skin. After my return to Santa Fe narrated our discovery of that building, and some enthusiastic men went in search of it, they called it the Grand Quivira...

Mr. Woodward's note 16, page 139.

"This was the famous, almost mythical place, "La Gran Quivira" for which Coronado sought. He found his rainbow end in a grass thatched Wichita village many weary miles out upon the plains, not at all the city of gold he hoped to discover. The name Grand Quivira was applied to this particular ruin many years later. Gregg described this ruin or rather series of ruins located in northeastern Socorro county, New Mexico, on a desolate mesa, one hundred and fifty miles south of Santa Fe. It was probably a pueblo of the Piros Indians, known as Tabira. It was first visited by the Spaniards in 1581. A mission church, the ruins of which Wilson and his party found, was originally built in 1628, a newer and larger church being erected in 1644. The site was abandoned between 1670 and 1675 because of Apache raids. The immediate water supply of the mission was kept in artificial reservoirs, no doubt supplied by the aqueduct mentioned by Wilson. These reservoirs were of course dry when visited by the trapping party, hence their trouble in locating the headwaters which originally flowed through the zanja...."

"Gran Quivira"

Description of Gran Quivira in the period 1831-1839. Extract from Commerce of the Prairies, by Josiah Gregg - New York 1845 - Printed in Reuben Gold Thwaites, Early Western Travels. Cleveland, 1905 - Vol XIX pages 301-302.

".....In every quarter of the territory there are to be seen vestiges of ancient excavations, and in some places, ruins of considerable towns evidently reared for mining purposes.

"Among these ancient ruins the most remarkable are those of La Gran Quivira, about 100 miles southward from Santa Fe. This appears to have been a considerable city, larger and richer by far than the present capital of New Mexico has ever been. Many walls, particularly those of churches still stand erect amid the desolation that surrounds them, as if their sacredness had been a shield against which Time dealt his blows in vain. The style of architecture is altogether superior to anything

at present to be found north of Chihuahua -- being of hewn stone, a building material wholly unused in New Mexico. What is more extraordinary still, is, that there is no water within less than some ten miles of the ruins; yet we find several stone cisterns, and remains of aqueducts eight or ten miles in length, leading from the neighboring mountains, from whence water was no doubt conveyed. And, as there seem to be no indications whatever of the inhabitants' ever having been engaged in agricultural pursuits, what could have induced the rearing of a city (165) in such an arid, woodless plain as this, except the proximity of some valuable mine, it is difficult to imagine. From the peculiar character of the place and the remains of the cisterns still existing, the object of pursuit in this case would seem to have been a "placer," a name applied to mines of gold-dust intermixed with the earth. However, other mines have no doubt been worked in the adjacent mountains, as many spacious pits are found, such as are usually dug in pursuit of ores of silver, etc.; and it is stated that in several places heaps of scoria are still to be seen.

"By some persons these ruins have been supposed to be the remains of an ancient Pueblo or aboriginal city. That is not probable, however, for though the relics of aboriginal temples might possibly be mistaken for those of Catholic churches, yet it is not to be presumed that the Spanish coat of arms would be found sculptured and painted upon their facades, as is the case in more than one instance. The most rational accounts represent this to have been a wealthy Spanish city before the general massacre of 1680, in which calamity the inhabitants perished -- all except one, as the story goes; and that their immense treasures were buried in the ruins. Some credulous adventurers have lately visited the spot in search of these long lost coffers, but as yet none have been found."

See also note 124, page 301.

****

APPRECIATION

(Ed. Note: Here is a mighty pleasant letter a visitor sent back to one of our men:)

Just a note to tell you again how much Mrs. Shattuck and I enjoyed the visit to Casa Grande. To refresh your memory we were the couple you took so much time with on February 29, in the rain. We both feel quite honored and very fortunate that we had such luck as to have you show us through Casa Grande. We went there interested and came away very enthusiastic, it makes an enormous difference how a subject is presented and explained. After our visit to Casa Grande we went to all the other National Monuments on our route through Arizona. We had a very fine visit at Tonto and also want to express our appreciation for

the courtesy shown us by all of you men in charge of these very interesting places. At Tonto and Montezuma Castle the men who showed us around spoke up, just as you did, when they found out that I was a little hard of hearing. We both think you have established a very fine thing in these National Monuments, handled by interesting and capable men.

We failed to ask you for a pamphlet on Casa Grande but would like to obtain one if such exists. Also if there happen to be any good books on the subject,would it be asking too much to have you inform us of them? We have really become very much interested in this subject and are looking forward to the time when we can again visit the various ruins. We also took your advice and drove down to the Mission of San Xavier Del Bac and found it interesting also.

Thank you again for a most enjoyable two and one half hours at Casa Grande and I sincerely wish that I had some way in which I might be able to return the visit.....

****

GREAT AMERICAN FAMILY

By Earl Jackson

A Three Act Play

Act I

Scene: The Park Office and Parking Area of a National Monument. In the background are the high cliff walls of a canyon, and in the cliff are the ruins of prehistoric Indians dwellings.

Cast: Pa Jones.
Ma Jones.
Jack Jones, son, about 19 years old.
Ruth Jones, daughter, about 18 years old.
Bill Smith, the Park Service Ranger-guide.

Ranger - (Greeting Joneses as they drive up.) Howdy, folks. In to see the ruins?

Pa Jones - (Getting out of car.) Well, I don't know. Where are we? Where is the Monument?

Ruth - Yes. Where is the Monument? That sign back on the highway said we'd see a monument.

Ranger - This is the Monument. This canyon is a part of it. The Monument is a reserve ---

Ruth - (Getting out of car.) Oh, Jack! Look at all the funny holes! (Pointing to cliff caves.)

Ma Jones - Ranger --- you are a ranger, aren't you, or are you an Army Officer --- where are the Indians? (Gets out of car after Jack

crawls over door). Oh, those horrible roads. The dust and those hairpin curves. How can you stand it?

Ranger - The Indians don't live here any more. Visitors come here to see where the Indians used to live three hundred and fifty years ago. I will be glad to guide you through the ruins and explain them to you, if you will just step over to the office and register.

Ruth - Oh, Dear! No Indians! And that man on the highway told us we would see Indians.

Jack - Nerts! I knew it'd be a fake. What'd I tell you ---

Pa Jones - Quiet, Jack. Listen to what the policeman has to say.

Ranger - If you'll just step inside and register ---

Ma Jones - What? Do we have to pay, after driving fifty miles to get here? What are the charges?

Ranger - There are no charges, Lady. All you do is sign your name on the big register book, so the government will have a record of how many visitors come here, and from where.

Ruth - Do we have to register?

Ranger - You are not forced to, but the Park Service appreciates it.

Ruth - Oh, goody. I'll write my name as Myrna Loy, from Shanghai. (They proceed into the register room.)

Pa Jones - (About to sign.) Shall I sign for all of them?

Ranger - That will be fine. Mr. and Mrs. and Family.

Ruth - Oh, Daddy, I want to sign my name. (Pa Jones signs "Mr. and Mrs. and family.")

Ranger - I beg your pardon. I didn't mean sign just Mr. and Mrs. and family. I meant to put your names after it. "Mr. and Mrs. Brown and family," or "Green and family.")

Jack - Pop, I'm ashamed of you. Ain't you got no larning'?

Pa Jones - Sorry, I'll fix it. (Correcting the signature, adding family name.)

Ranger - Thanks, folks. Now you're registered, we can start the trip. It will take ---

Ma Jones - (Pointing to register book) Pa! Sakes alive! Look who's been here! The Herrings from Sandy Wash, just as sure as I'm alive.

Pa Jones - (Looking at register.) So it is. Well, let's get going. The gentleman is waiting for us.

Ma Jones - (Excitedly). Those people live in the next town from us. When did they register?

Ranger - The date there shows they were in yesterday.

Ma Jones - Oh, maybe you remember them. Do you remember a green car with a Kansas license and two people in it?

Ranger - I'm sorry I can't place your party. There were several Kansas cars in yesterday.

Ma Jones - Oh, but you must have remembered this one. The man was about as tall as Pa there, and he used to be a professor.

Ranger - I'm sorry. He didn't tell me if he was.

Ma Jones - Oh, so you saw him?

Ranger - I don't know.

Pa Jones - Oh, come on, Ma. Let them live in peace. We're in a hurry. Ranger, where are the things you are going to show us?

Ranger - Up the canyon this way.

Ruth - Oh, Ranger, don't tell us we have to walk?

Ranger - Yes. You walk through the principal groups of ruins. The trip lasts about an hour, and you walk nearly a mile round trip. It's a good trail.

Ma Jones - (Throwing up her hands.) Mcerciful heavens! A mile did you say? I could never do it in this hot sun and dust.

Jack - Aw, come on, Ma It'll be fun. Maybe we'll see an Indian.

Ma Jones - I won't budge a foot from this car. Why, the idea! Walk a mile to see those black holes in the cliff? I can see them from here.

Pa Jones - (Disgustedly.) All right, Ma, you can stay here. I can't understand you. You were the one who wanted to come.

Ma Jones - (Vehemently) Lay the blame on me. That's just like you, Fred Jones. How did I know you had to go to the end of nowhere to reach this place? And besides, it's you and Jack who are always afraid we'll miss something.

Pa Jones - (Wearily) All right, all right. Now I'm here I'm going to see it. Are you coming, Jack and Ruth?

Jack - Sure, Pop.

Ruth - Yes, Daddy dear, if Mr. Ranger doesn't walk too fast.

Act II

Scene: The trail which leads up the canyon into the ruins. Ma Jones has stayed behind in the car. The rest of the Jones Family is with the Ranger. The trail is narrow, and Ruth pushes past Pa to walk beside the Ranger.

Ranger - You can see quite a number of the caves as we walk along. The ones the Indians lived in are those large ones at the bottom of the cliff. The others are the result of weathering. They dug their houses out with stone picks.

Ruth - Ranger, are we in Arizona now?

Ranger - Why, no. This is New Mexico. Arizona is three hundred miles West.

Ruth - Then why do you have Arizona on your belt buckle?

Ranger - Because I went to school over there.

Jack - Say, Mr. Ranger, I thought you said the Indians didn't live here any more. I just saw one, in that cave. (Pointing.)

Ranger - You did? Where? Oh, that is one of the CCC boys prowling along the cliff. The Indians left here at least three hundred and fifty years ago. We think they probably moved down onto the Rio Grande River.

Pa Jones - Then they weren't killed out by enemies?

Ranger - We think not. These were a peaceful, agricultural people, but they were well able to take care of themselves. Drouth was likely the reason for their departure.

Jack - Oh, I see. Say, Pop, that was the way we'll have to be leavin' Kansas if the dust storms don't stop, ain't it?

Ranger - Now here we see one of their kivas. A kiva was an underground ceremonial chamber, and only the men seem to have entered them. They ---

Jack - Ha ha ha! Ruth, I told you! Women did all the Work, and the men ruled them. See, like he just said, women weren't holy enough to go into the kivas.

Pa Jones - He didn't say that, Jack. Let him explain.

Ranger - It probably wasn't a question of holiness, but a division of function. Men took care of most religious matters, of hunting, fighting, while women did the farming and took care of the home. (They climb a trail to the foot of the cliff, where the caves are.) Now here is one of the typical cave houses. You can look inside the door and see the pick marks on the ceiling, and the smoke blackening on the walls.

Jack - (Noticing small door opening.) These people must have been pygmies.

Ranger - No. We have learned postively that the prehistoric Indians were about the same size as modern Indians. That low door was likely designed for protection so that ---

Pa Jones - Well, I've always heard they were little fellows. Why a fellow I know back home has the mummy of one, a little tiny thing. You could tell it was a grown man, though, by the size of its teeth.

Ranger - Well, all I have to go on is the evidence we dig up. We find lots of the skeletons, and they are the same size as modern Indians. Science tells us there were no pygmies in this country. Maybe your mummy had its first teeth instead of its last ones.

Pa Jones - But you could see them. They was just like buck teeth and --

Ruth - Oh, look at the pretty blue berries on this tree. Ranger, what kind is it?

Ranger - That is a juniper. It is commonly called a cedar, but we have no real cedars growing wild in this country. This variety is the One-seeded Juniper. Tear open a berry and you'll see ---

Jack - Say, that's interestin': They make gin out of Juniper berries don't they?

Ranger - I don't know. Now as I was saying, here is a nice cave room. Notice it has a smoke hole above the door. And there is a little hole near the foot of the wall ---

Ruth - Oh, don't tell! Let me guess. It's to let the cat out, isn't it?

Ranger - (Solemnly) Yes. (They walk on a few feet.)

Jack - (Noticing a tall spire of weathered rock.) Say, Pop, I guess that's the Monument. Ranger, isn't that the monument?

Ranger - No, that isn't the Monument. That's just a natural formation. The Monument is a reserve of land ---

Ruth - Oh, I remember. You described the monument a while ago. Well, where <u>do</u> we see it?

Ranger - (Desperately.) Pretty soon. (They walk a few feet farther)

Now here is an interesting room. Notice how they put the plaster on this wall to cover up the black. They plastered it just high enough so that ---

Ruth - Oh, Ranger, that's fascinating! You know, I've always wanted to meet a real archaeologist, and I believe you are one. How do you get to be one.

Ranger - It's best to go to a University and take courses in it. Then, some colleges have summer schools in the field which ---

Ruth - It must be frightfully romantic, digging up dead things and all. But I don't suppose they'd let poor little me dig. They don't allow girls to dig, do they?

Ranger - Why, sure, if they are really interested.

Ruth - Daddy, I am going to study archaeology.

Pa Jones - Ruth, don't alarm me. No offense intended, Ranger. Only if Ruth happens to meet a young Geologist she will want to study Geology, and if she meets a ---

Ruth - Daddy! You brute! (And so the trip through the ruins goes.)

Act III

Scene: Back at the Park Office and the car, where Ma Jones is.

Ruth - Oh, Mother, it was the most wonderful thing I ever saw. All those cute little holes, and little doorways. They must have been the littlest people.

Ma Jones - (Grumpily) Well, I'm glad somebody enjoyed this trip. I nearly burned up here in the heat. Now maybe we can get on the road to Taos. (They family get in the car).

Pa Jones - Well, Ranger, I certainly thank you for your courtesy and help. You've made it mighty nice for us.

Ranger - You're certainly welcome. I hope you can come again. Perhaps there will be something else I can show you.

Ruth - You've been perfectly delightful, And I've learned so much my poor head is simply going round and round ---

Jack - (Whistles "The Music Goes Round and Roung.)

Ruth - And I'm going to write a term paper on this place, and then I'M coming west again and study archaeology, aren't I, Daddy? And I'll ask Mr. Ranger to help me.

Ranger - If I can help, I will be glad to.

(Jack starts car, and races motor. As they drive off a chorus of Goodbyes comes from all save Ma Jones, and Ruth sticks her head out the rear window and blows a kiss at Ranger Smith, dropping a lace handkerchief at the same time. Smith stands till they are out of sight, then goes to the fountain, where icy water is gurgling. He soaks his head under the water for some minutes, and then straightens up, to find that the Brown family from Creosote Flats has arrived for a guided trip.)

Finis.

NORTHEAST BUILDING

By the Boss

Several years ago, about 1926 or 1927, we were expending some money on wall protection in Compound A at the Casa Grande National Monument. Mr. George L. Boundey was supervising the work and was running a gang of two or three Indians. He was underpinning the worst walls with adobe and protecting the tops of the walls and the bad places with a coating of cement. Also, in order to prevent capillary attraction from taking ground water back up into the walls after a rain, we decided to run a trench a foot wide and a foot or more deep along each wall, carry our cement coating from a foot below ground level up to a foot or more above ground level and then backfill the trench.

When we started into the repair of the building which we know as the Northeast Building in Compound A, Mr. Boundey made some interesting finds. His original drawing of the job turned up in the files the other day and is copied here in order that the data may not be lost.

This building had been excavated by Dr. J. Walter Fewkes back in 1906-1908 and we never thought of finding anything when we started our repair work. I afterward recalled, however, that while Dr. Fewkes had gone under the floors of the Southwest Building and the rooms up the west wall of the Compound, he had, due either to lack of time or money, stopped his shovels at the floor levels in this Northeast Building.

Upon starting our trenches along the inside of the walls and getting beneath the floor level, Mr. Boundey began finding some interesting things and we finally determined to go through the whole site since we had to move between a third and a half of the dirt in our repair job.

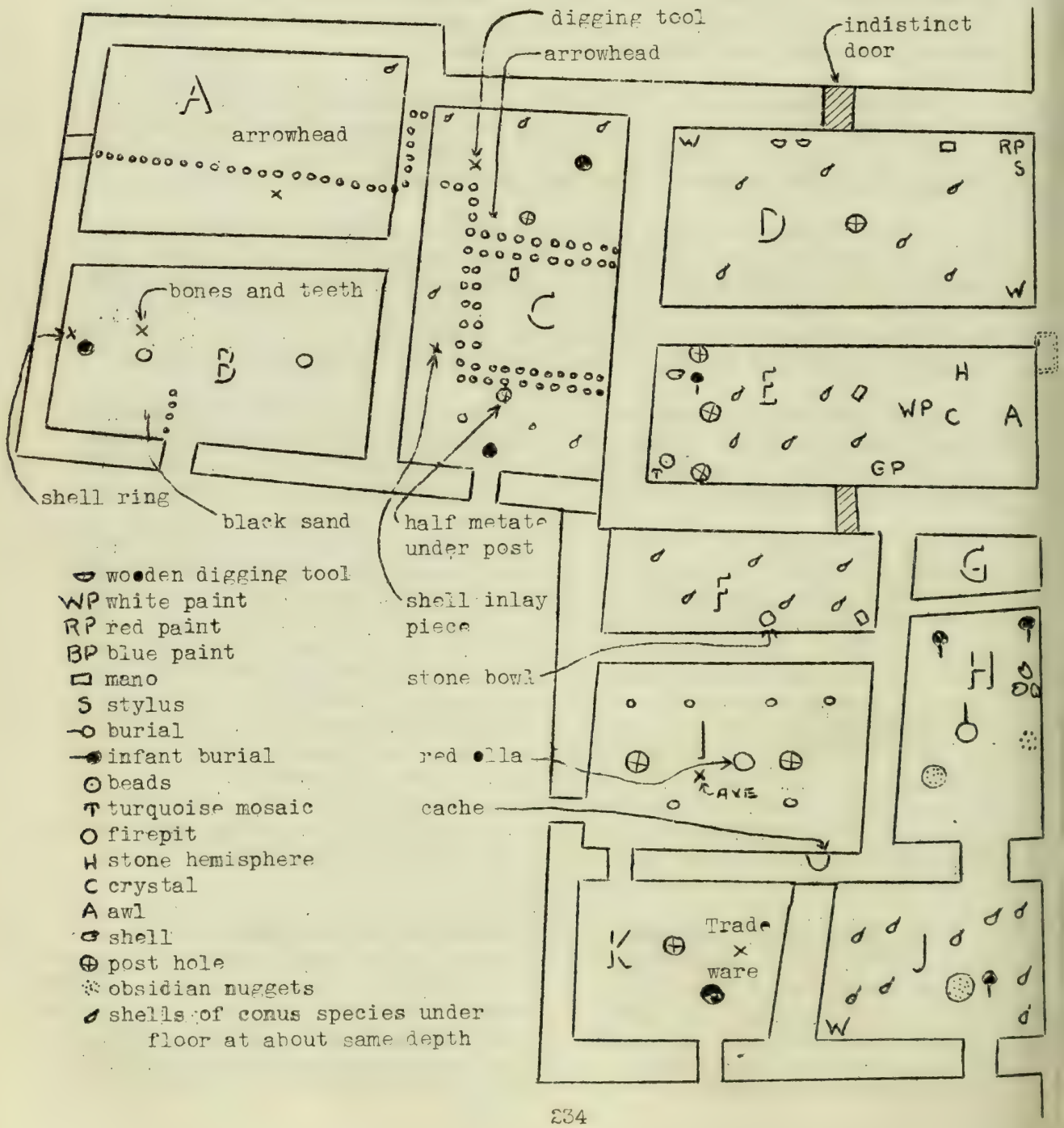
We found that an older house had stood on this site; that its walls were of the reinforced type of construction, having vertical poles embedded in the walls, and that this older house had been razed in order to erect the present Northeast Building. This older house was not so large as the present one and the people living in it had thrown some of their trash out to the south forming a small mound of material which had been levelled out and covered up by the south part of the present structure. This accounts for the trade ware which was found under the floor of room K. We could trace the foundations of this older house under the floors of rooms A and C but did not definitely locate them under D and E. This was not due to careless working because the whole job was very carefully done. We did not examine the plaza outside the walls of the upper house, but I have not doubt the foundations of the old house could be traced under the plaza to the north and west of room A.

The plan reproduced here is self-descriptive and needs little comment, but especial attention should be called to the location of the turquoise mosaic which was found near the southwest corner of room E. These are the finest pieces of turquoise mosaic which have yet been found in the United States and are on display in the museum at Casa Grande National

NORTHEAST BUILDING—COMPOUND A CASA GRANDE NATIONAL MONUMENT

Room H---Peculiar roof construction of matted juniper bark. Extended over firepit

Room K---Trade ware (Jeddito Black on Yellow) 18" under floor. No conus shells



Monument. It appeared to us that it had been buried under the floor for safe-keeping during the habitation of the present house and for this reason we believe it belons to the late period of Compound A.

The numerous small shells seemingly scattered purposely under the floors not only here but in many other rooms at Casa Grande give rise to the qestion of whether or not there may have been some ceremonial idea connected with their burial under the floor at the time the house was built. It is not unusual to find shells under the footing of the posts which supported the main beam in the roof. Might there not have been some idea that by offering these shells, which came from the home of the water God, from the great water to the southwest, where, as far as they knew, all the water in the world was stored, they could gain the good will of the water God and be assured of plenty of water for their crops as long as they lived in this properly dedicated house?

****

"THRONE" ROOM IN "CLAN HOUSE"

The plan here shown is that of the large room in the "Clan House" at Casa Grande National Monument. This is the room which has the so-called "throne" in it, shown here by the hatched portion of the wall a little to the right and below the center of the room.

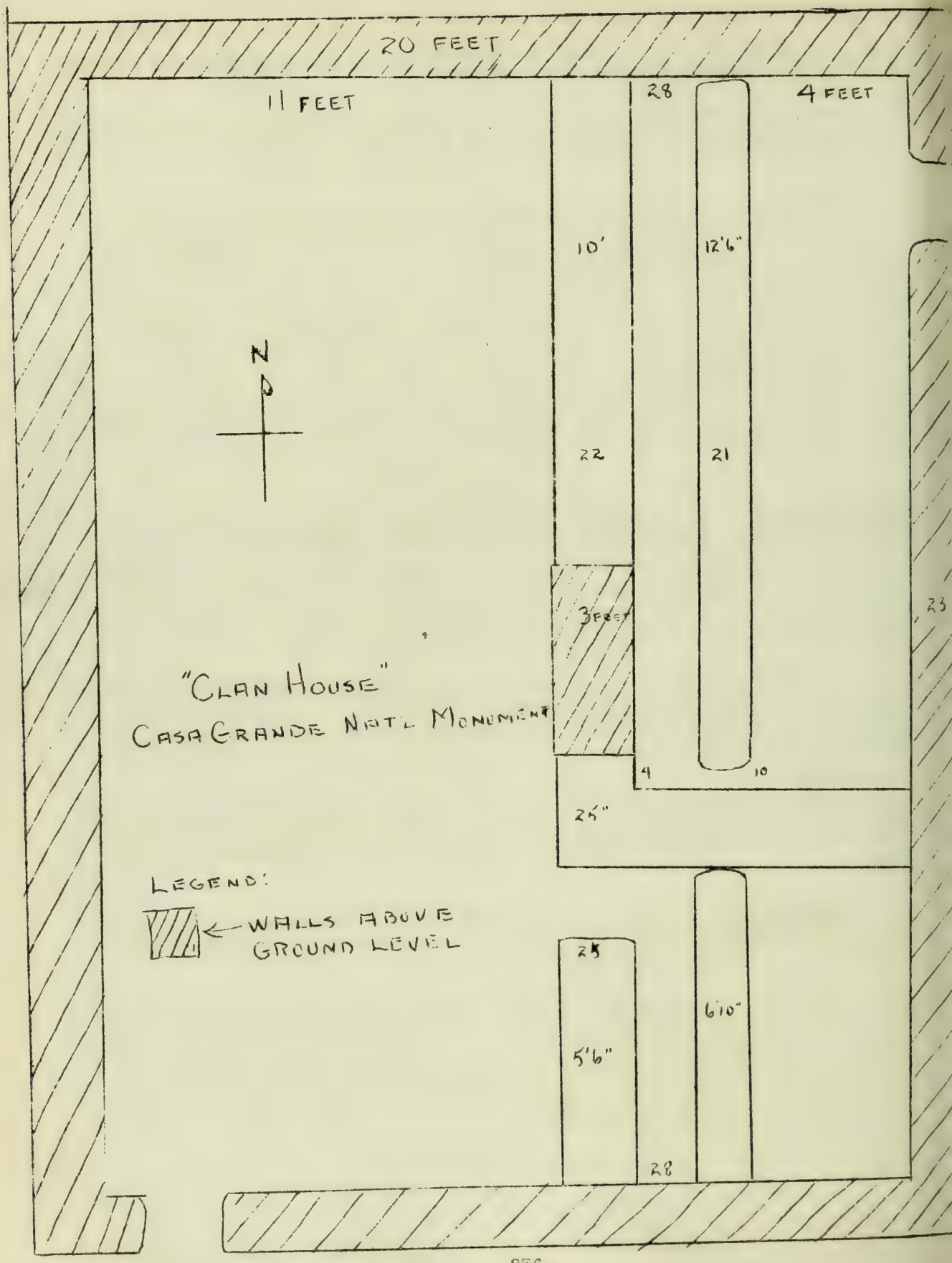
In repairing the walls of this room in 1926 or 1927 we ran trenches beneath the floor along the footing of the walls in order to bring a cement coat up from a foot or more underground to prevent ground sapping by capillary attraction.

In running these trenches we found the footings of walls underneath the floor of the room and discovered that the so-called "throne" is a portion of one of these older walls which was left sticking up through the floor.

The wall to the south of the "throne" is abutted against the south wall of the room, showing that it was built after the south wall and it now stands about five feet above the floor.

There seems to have been a double reconstruction, for these foundations under the floor would fall into at least two periods. After the last reconstruction the "throne" and the piece of wall to the south of it were left standing while the remainder of the walls were torn down to or below the floor level. What purpose these two stub walls served has never been determined.----FP

****


20 FEET
11 FEET
28
4 FEET
10'
12'6"
N
22
21
3 FEET
23
"CLAN HOUSE"
CASA GRANDE NAT'L MONUMENT
4
10
25"
LEGEND:
WALLS ABOVE GROUND LEVEL
25
6'10"
5'6"
28

MORE ABOUT PEYOTE

(Ed Note: In a recent letter to Custodian Tom Charles, Director Fred Gibson of the Boyce Thompson Southwestern Arboretum comments thus:)

"Unless we become too much involved, more elucidation of Peyote seems to be needed at the present time. There is apparent confusion about the use of the name "Mescal Button" which means only the dried portions of the cacti cited in the list that I made and has no relation to the Mescal plant, which is any of several kinds of Agave species or Century plants, not in the least related to cacti.

"As for the Texas town called Pyote and Mr. Sitton's explanation of its origin, which undoubtedly refers to the shrub or in some cases a small tree, Sophora secundiflora, common names "Coral bean" and "Frijolillo." This plant bears coral-red beans that are very poisonous. The story goes that if one eats a quarter of one bean that he becomes very intoxicated, a half bean makes him crazy and a hole bean is sure death. I find no reference to it being called Peyote. Some of the cacti with that name do grow near there and it is likely that the town takes its name from that source, rather than from the shrub.

"I would like very much to get some seeds of the White Sage for planting here in our gardens, if not too much trouble for you to collect and mail. A very small quantity is all that is needed.

It looks like the Peyote business has picked up and maybe some of us will be convinced before it is over, so let's have it...."

****

BIRD BANDING

A total of 211 new birds were banded at Southwestern Monument stations during March.

Casa Grande, finishing up its heavy banding season, carried the main burden, banding 184. Operators at this station were aided immensely by John E. Fast, who made a specialty of Gambel Sparrows, and started a specific study project of that interesting little winter visitant. Approximately 55 Gambel Quail now carry colored bands as well as numbered ones, and we hope to make some interesting observations in the future.

Particularly heartening was the beginning of banding at Wupatki and Tumacacori, both potentially important stations.

Walnut Canyon and Bandelier were hampered by weather conditions which have made trapping difficult.

SOUTHWESTERN BIRD BANDING TOTALS

Species	Bandelier		Casa Grande		Chaco		Navajo		Pipe Spr.		Tumacacori		Walnut		Wupatki		Total
Bluebird,Ch-b.	Prior	Mar	Prior	Mar	Prior	Mar	Prior	Mar	Prior	Mar	Prior	Mar	Prior	Mar	Prior	Mar	
Bluebird,Ch-b.													215				215
Cardinal,Ariz.			1									1					2
Crossbill,Bend.													17				17
Chickadee,Mtn.							6						3				9
Creeper, R.M.	2																2
Dove, W.Mourn.			2	9													11
Dove, Inca				2													2
Finch, House			129														129
Flicker,Red-sh	1																1
Fl'c't'r,Ariz.			2														2
Gldfnch,Gr-bkd													2				2
Jay,Long-crstd	2																2
Jay,Woodhouse	3						6										9
Junco,Gra-hded	49	2					8										59
Junco, Montana							9										9
Junco,Pnk-side	7																7
Junco,Red-bkd	9						2						38				49
Junco,Shufeldt	7						13						10				30
Mockngbird,W.			2														2
Nuthatch, Pyg.	21												25				46
Nuthatch, R.M.	2												6				8
Owl, W. Horned			1														1
Phoebe, Say			18	1													19
Quail, Gambel			22	36													58
Roadrunner			3	1													4
Robin, Western													7				7

Species	Bandelier		CasaGrande		Chaco		Navajo		Pipe Spr.		Tumacacori		Walnut		Wupatki		Total
Spsecker,R-nape													4				4
Spsecker,RockyM.													2				2
Shrike,White-r.			2	1													3
Siskin, Pine													1				1
Solitaire,Town.													7			15	22
Sparrow,Gambel			274	129													403
*Sparrow,Lincoln				1													1
*Sparrow,WVesper				1													1
Sparrow,Wh.-cr.							6										6
Swallow,Ro-wng.			3														3
Thrasher,Bend.			4	1								1					6
Thrasher,Criss.			7														7
Thrasher,Sage															2		2
Titmouse, Gray													1				1
*Towhee, Canyon												2					2
Towhee,Gr-tail			2									4					6
Towhee,Spurred	1																1
*Waxwing,Cedar																1	1
Woodpckr,Gila			7	1													8
Wdpkr,RM Hairy	1																1
Wdpkr, Mearns													9				9
Wren, Cactus			34	1								1					36
*---new species to this listing																	
SUB-TOTAL	105	2	513	184	0	0	50	0	0	0	0	9	347	0	3	16	
TOTAL		107		697		0		50		0		9		347		19	1229

RUMINATIONS

Chief, I wasn't far wrong when I told you back there in Washington that I had better get back on the job or the boys would find out how useless I was. Everything was well greased and running smoothly when I arrived at headquarters and started to making a hand again with the work. All the accumulation that four weeks put on my desk was the yellows and a very few pieces of special mail. From which I take it I am getting to be a big executive since I can persuade some one else to do most all the work.

Blessings on Charlie Brill's head for making us introduce that system of filing yellow copies consecutively! A man can come in from the field after a week or two weeks or, as in this case, a month away from his desk and all he has to do is to read a thousand yellows and he knows what went through the office while he was away. And that is only one of the blessings Charlie Brill left with us too.

This thing of finding out that the Southwestern Monuments didn't all evaporate while I was out of the district has shown me the possibilities of taking a vacation this summer or next fall. The last vacation I took lasted about ten days and then Mr. Albright wired that he was coming into my district and I had to hurry home and try to convince him that we were needing twice as many men and twice as much money as we were getting. We were fairly successful in proving our point too, but that is another story.

You have, I hope, noticed this ruckus which has started among us as to whether or not a man should have a day off every week. It looks like we are progressing or at least changing our viewpoint from the old days when there wasn't any argument about it; we just didn't have the day off. As you know, Al Bicknell is wintering with us down here and he and I occasionally tell a few lies about the old times as old-timers will in order to keep the fires of argument burning, as it were. Al is an old hand around the Yellowstone and it is great to hear him tell of all the joys of winter patrol; he does it so well that I had much rather hear him tell it than go up there and experience it myself. By the way, as soon as Al gets through building a few more craters up there in the Craters of the Moon National Monument he is going to move down here and join our crew.

We thought we were going to get results from all this crying in the wilderness about studying visitors. Carl had some funds we thought we could use for putting a real psychologist among our monuments and spend six months trying to find out what a visitor thinks and why. We built several large air castles, refused to consider half a dozen willing but ignorant youngsters and had just won our way through to one of the few men in the United States who knows much about museum visitors and were dealing for one of his right hand men to take on our problems when word came out of your office that we couldn't hire a psychologist with those funds, and so our brilliant bubble broke.

So, as you will note in the Supplement, we are going on guessing the best we know how what the visitor is going to think when he gets into the Montezuma Castle museum and have worked out a basic study of the case set-up there. It looks pretty good to our boys, but of course this is only the primary stage and it is going to have to run the gantlet in the offices of Carl and Ansel and undergo many amendments and improvements before it reaches the final stages.

I still think, however, that while we are studying the reactions of bugs and birds and beasts and flowers, it would be good business to put a couple of experts on the study of visitor reactions. After all a visitor ought to grade as high as a bug and if it is a matter of aiding the scientist who has been hit by the depression, I guess the psychologists are about as depressed as the scientists in these various other fields.

A word of thanks is due Mr. John Fast who not only collaborated on gathering the material and writing the article on the Hohokam pottery figures in this Supplement, but who furnished the plates to illustrate it. Mr. Fast is one of our Honorary Research Students Without Pay who comes out from the East each winter and stays with Mr. and Mrs. Smith, over at the Vah-ki Inn, for a couple of months while he works hard at some of the problems which worry us and appeal to him. He has gone back home now, but we are looking forward to having him with us again next fall.

Unfortunately, in the rush of the last two months, we have been unable to find time to get out a Broadcast, but we are hoping to find time for one in April before all this gossip of the District which we have picked up as we went hither and yon gets too old.

Cordially,

Phe Boss

Southwestern Monuments

MONTHLY REPORT · APRIL · 1936 ·



DEPT · OF · THE · INTERIOR ·

· N · P · S ·

SOUTHWESTERN MONUMENTS
APRIL, 1936, REPORT
INDEX

CONDENSED GENERAL REPORT

Travel----------243
General----------244
Administration----------244
Maintenance, Improvements, New Construction----------245
Activities of other Agencies in Monuments----------246
Flora, Fauna, Natural Pheonomena246
Use of Mon. Facilities by Public246-a
Protection----------246-b
Miscellaneous (Mail Count)----246-b

REPORTS FROM THE MEN IN THE FIELD

Aztec Ruins----------270
Bandelier----------278
Bandelier Forestry----------282
Canyon de Chelly----------250
Capulin Mountain----------263
Casa Grande----------272
Chaco Canyon----------268
Chiricahua----------262
El Morro----------276
Gran Quivira----------247
Chiricahua, ECW----------262
Montezuma Castle----------269
Navajo (March Report)----------277
Pipe Spring----------264
Saguaro----------259
Sunset Crater----------256
Tonto----------275
Tumacacori----------260
Walnut Canyon----------257
White Sands----------248
Wupatki----------252
Yucca House----------269

HEADQUARTERS STUFF

Branch of Education----------282
Engineering----------284
Wildlife Division----------285
Closing----------287

THE SUPPLEMENT

Sunset Crater National Monument, by Vincent W. Vandiver, Reg.Geolo.--291
Some Early History of Pipe Spring, by Leonard Heaton----------299
Notes Taken in an Interview with Alonzo Winsor, by Leonard Heaton, March, 1936----------301
A Reconnaissance of Tonto Cliff Dwellings, by Victor A. Stoner-------304
Visitor Research at Casa Grande----------310
Visitor Research at Pueblo Grande----------314
Bacteria in Tumacacori Walls, Article in "Arizona Republic"----------317
Vegetation of Keet Zeel Canyon, by K. C. Karbchuer----------318
Southwestern Bird Banding Totals----------320
April Bird Notes at Bandelier, by Betty Jackson----------322
Ruminations, by the Boss----------322

SOUTHWESTERN MONUMENTS PERSONNEL

As of May 1, 1936:

HEADQUARTERS, Southwestern Monuments, Coolidge, Arizona: Frank Pinkley, Superintendent; Hugh M. Miller, Acting Assistant Superintendent; John H. Diehl, Associate Engineer; Robert H. Rose, Assistant Park Naturalist; Dale S. King and Charlie R. Steen, Junior Park Naturalists Luis Castellum, ECW Clerk.

GENERAL FIELD MEN: Charles A. Richey and Harry Langley, Resident Landscape Architects; J. B. Hamilton, Associate Engineer; J. H. Tovrea, Chief Engineering Aide. Andrew Clark, Totopgrapher; Carl Schmidt, Rodman.

FIELD STATIONS:

1. Arches---Moab, Utah. J. M. Turnbow, Custodian.
2. Aztec Ruins---Aztec, New Mexico, Johnwill Faris, Custodian; Robert W. Hart, Ranger-Archeologist.
3. Bandelier---Box 669, Santa Fe, New Mexico. Earl Jackson, Custodian.
4. Canyon de Chelly---Chin Lee, Arizona. Robert R. Budlong, Custodian.
5. Capulin Mountain---Capulin, New Mexico. Homer J. Farr, Custodian.
6. Casa Grande Ruins---Coolidge, Arizona. W. J. Winter, Custodian; J. Donald Erskine, Park Ranger.
7. Chaco Canyon---Crownpoint, New Mexico. Thomas C. Miller, Custodian.
8. Chiricahua---Willcox, Arizona.
9. El Morro---Ramah, New Mexico. E. Z. Vogt, Custodian.
10. Gila Cliff Dwellings--- Cliff, New Mexico. No Custodian.
11. Gran Quivira---Gran Quivira, New Mexico. George Boundey, Custodian.
12. Hovenweep---Cortez, Colorado. No Custodian.
13. Montezuma Castle---Camp Verde, Arizona. Martin L. Jackson, Custodian Frank Fish. Ranger.
14. Natural Bridges---Blanding, Utah. Zeke Johnson, Custodian.
15. Navajo---Kayenta, Arizona. John Wetherill, Custodian; Milton Wetherill, Trail Foreman.
16. Pipe Spring---Moccasin, Arizona. Leonard Heaton, Acting Custodian.
17. Rainbow Bridge---Rainbow Lodge, Arizona. No Custodian.
18. Saguaro---Tucson, Arizona.
19. Sunset Crater---Flagstaff, Arizona. J. W. Brewer, In Charge.
20. Tonto---Roosevelt, Arizona. Woodrow Spires, In Charge.
21. Tumacacori---Box 2225, Tucson, Arizona. Louis R. Caywood, Custodian Martin O. Evenstad, Ranger.
22. Walnut Canyon---Flagstaff, Arizona. Paul Beaubien, Ranger in Charg
23. White Sands---Alamogordo, New Mexico. Tom Charles, Custodian; Barry Mohun, Utility Man.
24. Wupatki---Flagstaff, Arizona. J. W. Brewer, In Charge.
25. Yucca House---Cortez, Colorado. No Custodian.

CONDENSED REPORT

Coolidge, Arizona
May 1, 1936

The Director,
National Park Service,
Washington, D. C.

Dear Mr. Director:

The Condensed Report for Southwestern Monuments for April, 1936:

TRAVEL

	April, 1936	April, 1935	April, 1934
Aztec Ruins	701	554	579
Bandelier	742	643	440
Capulin Mountain	600	500	500
Casa Grande	3,436	3,766	2,747
Chaco Canyon	791	472	217
Canyon de Chelly	22	101	---
Chiricahua	550	---	---
El Morro	42	---	---
Gran Quivira	229	373	207
Montezuma Castle	1,054	1,350	1,335
Natural Bridges	---	---	---
Navajo	---	---	---
Pipe Spring	96	212	87
Saguaro	1,200	1,520	---
Sunset Crater	289	273	---
Tonto	876	812	---
Tumacacori	1,700	1,687	899
Walnut Canyon	647	314	---
White Sands	5,709	---	---
Wupatki	146	101	12
Yucca House	---	22	---
Actual Reported Registration	18,830	12,700	7,023

The 15 monuments which reported both in 1935 and 1936 showed a decrease from 12,678 to 12,529---149 visitors, or 1.1 percent.

The 10 monuments which reported both in 1934 and 1936 showed an increase from 7,023 to 9,495---2,472 visitors, or 35.1 percent.

However, the supposed decrease in 1936 probably is explained by more accurate counts now being taken; for all monuments at which accurate counts can be kept (except outlying ones such as Gran Quivira, Pipe Spring, and Canyon de Chelly) showed substantial increases. Our conclusion, therefore, is that the monuments received in April, 1936, about 35 percent more visitors than in 1934; about 20 percent more visitors than in 1935.

CONDENSED REPORT (CONT.)

000 GENERAL

010 MATTERS OF UNUSUAL IMPORTANCE

White Sands: Seventy-five carloads of people---some from as far away as 100 miles---traveled an estimated 25,000 "man miles" to attend Easter services at this monument. It was visited by a total of 1,558 visitors that day. See page 248.
Wupatki: See page 255 for progress in preparation for the Navajo exhibit June 6 and 7.

020 WEATHER

Summer has almost arrived for our southern monuments, although Chiricahua received a little snow the first part of April and Gran Quivira was visited by a dust and a snow storm. Weather in the north has been variable, but has been conducive to travel save at Pipe Spring which was visited by a near-hurricane (see page 264) and Canyon de Chelly. The range appears somewhat dry, but there seems to be plenty of moisture in the regions around Tonto and El Morro.

100 ADMINISTRATIVE

120 MONUMENT INSPECTIONS BY SUPERINTENDENT PINKLEY

Tumacacori: With Chief Engineering Aide Tovrea, Superintendent Pinkley visited this monument April 8, and discussed various architectural and historical problems with the local staff.

122 INSPECTIONS BY SPECIAL FIELD REPRESENTATIVES

Junior Naturalist King: inspected Tonto April 5, Montezuma Castle April 6, Aztec Ruins April 7. Visited Tumacacori March 31, Walnut Canyon April 6, and Bandelier April 9 and 23.
Associate Engineer J. H. Diehl: Made inspections at Gran Quivira three times, White Sands three times, also Bandelier.
Artist Lawrence Moffett: Of Field Division of Education at Aztec and Wupatki.
Regional Wildlife Technician Borell: Walnut Canyon April 10; Bandelier April 13-19.

123 MONUMENT INSPECTIONS BY NATIONAL PARK OFFICERS

Mr. Frank Kittredge visited White Sands.
Mr. W. H. Wirt visited Pipe Spring.

180 CIRCULARS, PUBLICITY

Headquarters: Prepared Southwestern Monuments Special Report No. 3,

180 CIRCULARS, PUBLICITY (CONT.)

"Sunset Crater Geological Report," by Vincent W. Vandiver. Prepared 300 informational leaflets for Pipe Spring.
White Sands: "Denver Post" ran a picture of White Sands in the Easter Rotogravure section. See page 250.
"El Paso Times" gave publicity to Easter services at the "Crystall Bowl." See page 250.
White Sands was mentioned in "Colliers," April 11. See page 250.

200 MAINTENANCE, IMPROVEMENTS, NEW CONSTRUCTION

210 MAINTENANCE, UNUSUAL

Capulin Mountain: Road to crater in very bad shape. See page 263.
Casa Grande: Leathers in water pump and armature in Kohler had to be replaced. Money spent this year on repairs to electric system would have paid electric light bills (using USIS power line) for years to come. Sewer system still a health menace, particularly as weather becomes warmer. See page 274.
Chaco Canyon: Removal by University of New Mexico of their power line makes immediate replacement necessary. See page 268.
Montezuma Castle: Picnic tables being painted.
Pipe Spring: One-third of Upper House roof blown off by high wind. Repaired and new roof anchored by custodian. See page 264.
Tumacacori: Pump Valves clogged. Repaired with relief labor. See page 261.
Wupatki: Pipe line of Wupatki Spring clogged and was flushed. Is inadequate and needs replacement badly. See page 253.

220 IMPROVEMENTS

Pipe Spring: Army is rehabilitating the meadow pond for a swimming pool. Is temporary in character. See page 264.
Tonto: New latrines finished and painted. Old ocotillo fence taken down. See page 276.
Walnut Canyon: Entrance signs of Highway 66 put up. Warning sign on ruins trail installed. Registration stand repainted dark green to lessen name scratching. See page 258.

230 NEW CONSTRUCTION

Bandelier E.C.W.

1. Museum construction restarted. Vigas in place and portion of aspen ceiling in place.
2. Quarters No. 1 to be ready for occupancy May 18. Cabinet work progressing. All other finishing work completed, and paint crew busy.
3. Excavation, footings, fireplaces finished on Quarters No. 2,

230 NEW CONSTRUCTION (Cont.)

and walls at three foot height.
4. Rock quarry worked all month.
5. Sign crew in operation all month.
6. Some planting around Administration and Utility buildings.
7. Progress was slowed due to diminished crew of only 60 men available for work. Ranks are now refilled.

Chiricahua ECW. See page 262.
1. 600 additional feet constructed on Massai Point-Balanced Rock Trail, making total of 1600 feet.
2. Echo Trail now complete for 6,000 feet.
3. Poles set for 2¼ miles on Massai Point-Portal telephone line.
4. During first two weeks of month 70 trees were planted on camp ground and adjacent area.
5. Excavation for buildings in utility area started April 23.
6. Seventy additional enrollees arrived April 25.

Gran Quivira: Satisfactory progress on pump. Water has cleared sufficiently so that it is being stored. See page 247.

300 ACTIVITIES OF OTHER AGENCIES IN MONUMENTS

320 COOPERATING GOVERNMENT AGENCIES

Wupatki: National Forest Service has delivered two sets of steel rail cattle guards for western boundary. Trail Foreman Brewer will furnish labor of installation. See page 253.

320 COOPERATING AGENCIES OTHER THAN GOVERNMENT

Chaco Canyon: University of New Mexico began construction of their headquarters building south of Chaco Wash April 13. See page 268. Soil Conservation Service have accomplished much work in Hungo Pavi Canyon. See page 268.

Wupatki: Museum of Northern Arizona very kindly loaned 26 bird skins to aid in field identification of species and banding. See page 254.

350 DONATIONS AND ACCESSIONS

Aztec Ruins: Three case exhibits delivered from Field Division of Education at Berkeley: (1) History of Aztec Ruins, (2) Prehistoric Peoples of the Southwest, (3) Tree Ring Exhibit. Custodian Faris reports he is very pleased with them. See page 271.

Pipe Spring: New donations are an old wood chisel and a photograph of Dudley Levett, one of the original group who gave the name to the Monument. See page 266.

400 FLORA

El Morro: Pinyons heavily loaded with small cones. Promise heavy crop of nuts next autumn. See page 277.
Wupatki: Common names of identified plant specimens being worked up for trailside label copy. See page 254.

430 ARCHEOLOGY

Bandelier: A hitherto unmentioned group of eight to ten cave rooms discovered half mile upstream from Ceremonial Cave. Best preserved front section thus far reported from Frijoles Canyon. See page 281.
Saguaro: Large Hohokam site on the monument needs more adequate protection. See page 260. Ranger reports interesting old lime kilns supposedly associated with Camp Lowell in 1873. See page 260.
Wupatki: Room 7 which contains restorable sherds and possibly other artifacts needs work by archeologist-trowelman to save material which is washing out. See page 254.

460 BIRDS

General: 108 new birds banded in monument banding stations during the month. Fine record turned in by new station at Pipe Spring.
Walnut Canyon: See page 258 for April bird notes. Wild Turkey seen on east entrance road.
Wupatki: See page 254 for April bird list.
Bandelier: See page 322 for April bird notes.

470 ANIMALS

Bandelier: Beaver have left recent workings, apparently. See page 280.
Gran Quivira: Unusual number of rattlesnakes. Custodian sees two to four a day near buildings and ruins. Is forced to control. See page 248.
Wupatki: Five antelope seen near Merriam Crater. See page 254.

500 USE OF MONUMENT FACILITIES BY PUBLIC

530 NEWSWORTHY VISITORS

Aztec: Governor Tingley of New Mexico
Bandelier: Dr. Warren G. Hubert, College of the City of New York; Fred C. W. Parker, secretary of Rotary International; Mr. and Mrs. Raymond V. Ingersoll of Brooklyn, N.Y.; Dean H. E. Hawkes, Columbia University.
Casa Grande: James E. Van Zandt, national commander of Veterans of Foreign Wars; Col. Frank Van Vleck, one of founders of Sigma Xi, national scientific fraternity; W. B. Hare, U. S. Weather Bureau; Charles Amsden, author, and secretary of Southwest Museum; John McGregor, dendrochronologist of Museum of Northern Arizona.

530 Newsworthy Visitors (cont.)

El Morro: Frank Vesely, New Mexico Commissioner of Public Lands.

Saguaro: Dorothy Disney MacKaye and Milton MacKaye, authors.

Tonto: Prince Shah Mir, Tiflis, Caucasus; Prince and Princess Czetwertynski, Warsaw, Poland; Elmer Rising, Harvard University.

Tumacacori: Frank Van Vleck of Navy Department; Dr. Homer L. Shantz, President of University of Arizona; Leo Borah of National Geographic Magazine; A. R. Grosherder, H. D. McVary, and A A. Sundin of Mt. States Tel. & Tel. Co. Mr. and Mrs. H. F. Brett of U. S. Veterans Facility, Legion, Texas.

White Sands: Signal Corps commanded by Major McDonald practicing sending and receiving radio messages in unique conditions; Dr. Crosby, Dr. Cornell, Dr. Bishop, and Miss Wright of U. of Rochester, studying entomology; Prof. A. N. Sayre, USGS; Dr. Ross Calvin, author of "Sky Determines;" Dr. Fegtly, dean of U. of Arizona law school.

Wupatki: Viscount Leopold Leiboriski of Czecho-Slovakia; Prince and Princess S. Czetwertynski of Warsaw, Poland; Tony Richardson, western author; Carl Beck and Maxwell Yazzie of SCS; Mark Radcliffe and Tom Dodge of USIS.

600 PROTECTION

610 POLICE PROTECTION

Montezuma Castle: Name "Ruth" scratched on plaster afternoon of April 19 or 20. See page 270.

620 FIRE PROTECTION

Walnut Canyon: 500-acre fire burned to within two miles of boundary. See page 258.

900 MISCELLANEOUS

MAIL COUNT:

Incoming:		
Government	1,369	
Personal	714	
Total Incoming		2,083
Outgoing:		
Government only	1,834	1,834
Telegrams:		
Incoming	43	
Outgoing	45	
Total telegrams		88
TOTAL CORRESPONDENCE HANDLED		4,005

Cordially, Frank Pinkley

REPORTS FROM MEN IN THE FIELD

GRAN QUIVIRA

By George L. Boundey, Acting Custodian

Visitors for the month equal 229.

The last ten days of the month the weather has been fair but the fore part was windy with much dust. On the 5th we had quite a heavy snowstorm which left the roads in bad shape when it started to melt.

Engineer Diehl was up inspecting the new pump and pressure system three times during the month. He seemed to be well satisfied with the progress Mr. Gipe is making with the well, and the water is sufficiently clear to begin pumping into the tank today.

Have started a general cleanup of the mission and grounds. The rattlesnakes are very plentiful. With the stone wheeled away and the grounds thoroughly raked think I can keep the snakes at a distance from the buildings. The paths leading to the south plaza and those winding thru the pueblo ruins am making 6' wide so there will be little danger to those walking in the paths.

The snakes---probably owing to higher altitude---are smaller than the desert varieties being three and three and a half feet long, and occasionally a "side-winder."

Last Friday I took the high school students to Quarai, the old mission and pueblos 12 miles northwest of Mountainair. There were 16 of them and all seemed to enjoy the outing. Mr. and Mrs. Baker took us thru the ruins and gave a very interesting talk on the old mission. The work there has been done by CCC boys. The old church and monastery have been cleaned out, picnic grounds provided and, though smaller and less imposing, many visitors are coming there from all over the state. The Bakers leave next week to take charge of excavations at another project, but they think a local caretaker will be appointed.

A great many birds, many of them new to me, are visiting the locality; immense flocks of Evening Grosbeaks are especially noticeable.

A Parent. Teachers Association has been formed in the village and with my projector am going to put on a number of pictures of parks, monuments, wildlife, etc. I gave a talk on Tumacacori when I was up here the first time and they seem quite anxious to continue the lectures.

This monument is dependent on good roads---something they have never had up here during the major portion of the year. Once the road question is solved, there will be no end of visitors to this monument.

****

WHITE SANDS

By Tom Charles, Custodian

I was about to say that I hope you have had the flu, but it doesn't seem to be the proper "approach." If you have had it and the fever that hangs at 100 to 101 degrees for weeks, with a potential flare of another two degrees and a bulldog determination not to recede one point, not even under an ice pack, then it will be easy for me to make you understand why there are so many things I have not done the past two weeks. If you haven't had the flu, I can't make you understand anyway.

One of the things I missed was the opportunity to take Chief Engineer Kittredge and Jack Diehl over the dunes and down along the east side of the old lake bed, between the Sands and the lake, over the proposed "beach drive." It would have been an opportune time for the poppy fields were making a gorgeous background for Vincent Vandiver's selenite hills. There is some other flower over there, too. I do not want a "run in" with the botanist but there are thousands of acres of a red flower as brilliant as the painted-cup. The stems are 18 inches to two feet tall and they grow higher along the foothills than the poppies, beginning where the poppies leave off.

By the way, do poppy fields mark battle grounds? It was along this old Mexican ox cart trail to the west of the White Sands that two or three companies of Negro soldiers were attacked by the Apache Indians in the early sixties. The few remaining Negros finally took refuge at Hospital Springs at the northwest corner of the monument and the poppies grow back along the trail for a dozen miles or more.

I missed the visit with Major McDonald and his Signal Corps of armored trucks, practicing the sending and taking of radio messages under the field conditions of the Great White Sands. I missed Dr. Crosby and wife of Cornell, and Dr. Bishop and Miss Wright of the University of Rochester in their search for new types and "new styles" in insect life which is so plentiful at the edge of the Sands.

Worst of all, Boss, I missed the Easter service. I see a smile spread over some of the office "mugs" as they read that line but it was an UNUSUAL service. Seventy-four carloads of people attended and drove over 25,000 man miles to attend. Many of them came distances of over 100 miles. The service was opened by assembly singing of the Doxology, then America, led by the Alamogordo Rotary Club. Reverend E. E. Baird, presiding, then said:

> "Here we find ourselves in a vast expanse of God-made beauty. Its very whiteness and purity are suggestive of the purity of God's original creation. Whatever of contamination and corruption there is in the world came into it by the hand of man. But the purity of these white sands and the brightness and joy of this Easter morning reminds us of Him whose

resurrection we are met to commemorate---Our Lord and Savior, Jesus Christ."

After the opening prayer there was singing, both solos and by the assembly and a short sermon by Dr. J. M. Perry, recently of Dallas, Texas. Even considering the early hour I was sorry to have had to miss it.

All day long the Easter-egg hunters were tearing up the sand hills out by the turn-around. One thousand and thirty nine people were counted at the end of the road in seven and a half hours. Adding the usual percentage which stops along the 20-mile front, we had 1558 visitors on Easter.

Barry counted cars 13 days this month: March 25, 26, 27, and 31, April 1, 2, 3, 7, 8, 9, 14, 15, and 16; a total of 93.5 hours or 7.2 hours per day. He counted 564 cars or an average of 6.33 cars per hour through the monument. Applying this on the basis of 14 hours per day we had 2,127 cars through the monument on the 24 week days. Former counts show that these cars carry an average of four people per car; therefore, we had 8,508 people through the monument in the 24 week days and 36% of them stopped and played in the Great White Sands, a total of 3,063 week day visitors. Our Sunday count shows as follows: March 22, 309; March 29, 160; April 5, 176; April 12, 1,558; and April 19, 443.

Week day visitors	3063	
Sunday visitors	2646	
Total	5709,	from Mar. 21 to April 20, incl.

Our Sunday cars carry an average of 4.76 people per car.

From now on I guess I am going to have to arrange for a night count. If I add that to my present duties will you give me "overtime?" Last Saturday the boys turned in their count at 4 p.m. and after that a State College group came over from Las Cruces, staged a soft ball game and a wienie roast. There were about 30 in the party. The next morning there was evidence of several other good sized parties at the Sands the night before. My estimate is that over half of the attendance at the Sands for the next five months will be after 4 p.m.

Among the distinguished visitors this month were Chief Engineer Kittredge of San Francisco; Prof. A. N. Sayre, formerly of Kansas University and Pennsylvania State, now with the U.S.G.S; Major McDonald and his squad of 60 signal service men of the U. S. Army; Dr. Crosby and wife of Cornell; Dr. Bishop and Miss Wright of University of Rochester; Dr. Ross Calvin, author of "Sky Determines," and Dr. Fegtly, Dean of the Law School, University of Arizona.

On Easter morning the Denver Post carried a 6 x 8 photographic picture of the White Sands with a picture of the Pulpit of the Yellowstone and Inner Imperial of Grand Canyon, under the title, "Western Wonderlands." By the side of the Sands picture were the following lines: "Shadow prints in wind woven fabric. Intricate ripple patterns stand out in the rays of the setting sun at White Sands National Monument, Alamogordo, New Mexico."

The day before Editor Lister Hubler said in his Personal Column of the El Paso Times: "Alamogordo will have an Easter service absolutely unique. There will be a sunrise song service in the "Crystal Bowl," in the very heart of the White Sands, reached by the new highway which penetrates far into this wierdly white fairyland..... No other crowd, anywhere in the world, will assemble in such a setting as the Crystal Bowl in the White Sands National Monument."

Jim Marshall, special writer for Colliers, in his "Romance of the West" April 11, was apologizing for his eastern friends not getting off the paving: "We fooled 'em one place," he quotes Joe Burry of the Tourist League, "We built a highway right past the White Sands, one of the Natural Marvels of the state and they had to look at it."

Dr. Ross Calvin of Silver City who made such elaborate references to the White Sands in his book, "Sky Determines," left your wife at the Sands again Tuesday gathering additional information and new inspiration for a new book which will be published soon.

Everything now points to a record crowd for the Annual Play Day, May the second. Thirty-two hundred Scouts, county officers and civic leaders, nearly a dozen towns are cooperating through their schools and civic organizations to make this a real get-together meeting for the entire southern part of the state. Let's hope for favorable weather and not too hot.

****

CANYON DE CHELLY

By Robert H. Rodine, Custodian

This custodian was mistaken last month when he thought that the month of April would mark the beginning of the visitor season at this national monument. Weather was fickle, and not conducive to encouraging visitors.

Total number of visitors during the month, 21. Of these, 17 persons viewed the canyon from the rim, 3 descended the White House Trail, 2 rode horseback within the canyon for a short distance. Total time, 1,515 minutes; total trips, 7; average time per group, 216 minutes. To break down these figures still further: Rim view trips, 4, total time, 615 minutes; average rim trip, 154 minutes. Horseback trip, 1; total time, 420 minutes (seven hours). Trail trips, 2, total time, 480

minutes; average trail trip, 240 minutes.

Now, Boss, you see why we need personnel. Each group averaged three persons. There were only seven groups. Total, 22 persons. Personnel stationed here, 1. (If the H.C.W.P. reads this, I'll alter that last figure to 1½ as a special concession). Last June, for example, we had 179 visitors. Let us suppose this meant 60 groups, average time 216 minutes, as was the case this month. Or total time of 216 hours. Figuring eight-hour days (which we don't) that gives us 27 days of time. But the records indicate that those 179 visitors were here on only 20 days. If we spent those 20 days, all day long with visitors (eight-hour day) we would have a total of only 160 hours, and the first figures showed 216 hours taken. It comes to around 11 hours each day, for 20 days. Now, let's figure a visitor increase of 100 per cent in the near future. If they averaged this month's time per group, and persons per group, and in June we get 366 visitors in 20 days, we get 120 groups, average time 216 minutes, total time taken in taking care of those visitors, 432 hours. That will mean that we'll be giving good service to visitors 21½ hours a day. Now, if someone will PLEASE refer this matter to Dale King, who speaks of a day a week off, to Johnwill Faris, who says he doesn't know what a day a week off is (I'll bite, what is it?), to Headquarters, with gates opened at 8 a.m. and closed at 5 p.m., and then to the Washington Office and the Bureau of the Budget, I'll appreciate it.

Weather was not so good during the month. We had .10 inch of precipitation, over a period of three days. We had a trace of snow, several sandstorms, and a thundershower. Maximum temperature during the month, 85 degrees, on the 14th; minimum, 18 degrees, on the 2nd, 6th, and 7th. Roads are now very rough, and were totally impassable for several days, due to rain and snow on the mountains between here and Gallup. Peach trees within the canyons have bloomed, and cottonwoods have good-sized leaves on them. The canyons have been discharging much water, and have been impassable the entire month.

Work on the water reservoir was completed during the month, and it is now completely patched, waterproofed, and ready for water. I have brought in some of the pumping machinery from Gallup, have ordered pipe, and as soon as it arrives, the work on the laying of the line from well to water reservoir will begin. The pipe should be out some time within the week.

Norman Jackson, of Montezuma Castle, paid us a fine visit during the month. We wish he might have stayed longer, and are going to expect him to visit us again when the canyons are passable. I'm sure we can readily convince him that here we have the "finest National Monument in the entire Park Service," if he is not already so convinced.

On the 8th we had the great pleasure of a visit by Mr. and Mrs.

D. O. Johnson, of West Portal, Colorado. Mr. Johnson is District Forest Ranger at West Portal, and we are hoping that they, too, may be able to return here when we can get ther within the canyons by car or horse.

On April 22, Ranger Robert Hart of Aztec Ruins, and Mr. John A. Frost, of the U.S.G.S., paid us an all-too-brief visit. The H.C.W.P. took them up on the rim and down the trail. They are anxious to return when the canyons become passable, and we are anxious to have them do so. I understand that Johnwill sent Ranger Hart over here to see a REAL Monument. Mr. Hart was appalled at the size of this Monument, for which he could hardly be blamed, being so used to a Monument more in the nature of a sidewalk alongside a paved highway. C'mup and see us sometime, Johnwill!!

****

WUPATKI

By James W. Brewer, In Charge

500 Use of Monument Facilities by the Public

71 guests registered at Wupatki Pueblo; 108 at the Citadel Group; 33 names are duplicated, leaving a total of 146 registered visitors to this Monument in April, 1936; 1935, 101; 1934, 12.

Of the 24 parties who visited Wupatki Pueblo I contacted only 16. This is largely due to my having to spend so much time away from the Pueblo itself repairing road failures of the P.I Chevrolet.

States were represented as follows: California, 21; Arizona, 15; Texas, 4; New York and Illinois, 3; Pennsylvania and New Mexico, 2; Oklahoma, Missouri, Maryland, Colorado, Rhode Island, Washington and the District of Columbia, each 1. Foreign countries: China, Australia, Poland, and Checho Slovakia.

530 Newsworthy Visitors

Prince and Princess S. Czetwertynski of Warsaw, Poland, at the Citadel on the 5th.

Viscount Leopold Leiboriski of Checko Slavokia (his spelling), also on the 5th.

Mr. Oakley of Soil Conservation Service on the 22nd.

Mr. and Mrs. Tony Richardson on the 22nd; Tony Richardson was born and raised on the Reservation and has written historical articles and western stories.

On the 24th Mr. Carl Beck and Maxwell Yazzie of S.C.S. brought Mr. Mark Radcliff and Mr. Tom Dodge of U.S.I.S. to the Pueblo to ascertain the location of the camp of Peshlacai Etsedi. Sallie guided them over the back roads to the hogan.

100 Administration

123 VISITS BY N.P.S. OFFICIALS

On the 21st Artist Moffett of the Berkeley office took detail for the Wupatki model under construction.

We had a very pleasant luncheon with Project Superintendent Hub Chase and Mrs. Chase on the 23rd.

And a good but too short chat with Junior Park Naturalist Dale S. King on the 24th. Relying solely on my faulty memory, Dale is the first headquarters visitor we had had since January 11!

020 Weather

March 25 to April 1: high 68 degrees,on the 31st; low 26 degrees, on the 27th; precipitation, trace on the 31st. Four cloudy and two extremely windy days. April 1 to 24th: high 90 degrees,on the 24th; low 25 degrees, on the sixth; four overcast cloudy days; on the 13th and all succeeding days billowy cumulus clouds gather in the P.M.; two traces of precipitation,on the 4th and 18th.

210 Maintenance, Unusual

On the 17th the three-quarter mile pipe line from the spring to the stone tank became clogged. The fault being with the catchment basin, I tore the stone slab cover off and cleaned out the basin and flooded the pipe line with clean water.

The basin should be covered with concrete box and removable trap door. If the pipe were to clog permanently it would entail considerable expense as well as inconvenience. The line is old and the joints are rusted together so that cleaning would be impossible. I think some provision for improvement of the "water system" should be included in the budget.

300 Activities of Other Agencies in Monument

320 COOPERATING GOVERNMENT AGENCIES

The National Forest Service (Coconino Forest) has delivered to the fence line gate two sections of steel rail cattle guard. As per my agreement, upon arrival of the understructure I will offer

labor (personal).

COOPERATING AGENCIES OTHER THAN GOVERNMENT

The Museum of Northern Arizona has very kindly loaned us 26 bird skins to aid in field identification and banding. The majority are sparrows.

400 Flora, Fauna, and Natural History

FLORA

A list of common names for our identified plant collection has been forwarded by Ranger Charlie Steen. We hope to get some labels for the trail-side specimens.

430 ARCHEOLOGY, HISTORY

Room 7 is badly in need of a trowelist. Please send us a ranger qualified to remove the many restorable sherds.

460 BIRDS

The Western Robin seems to have departed; none has been observed since the 7th. Other birds observed during the month are as follows: Townsend Solitaire (banded 29); White-rumped Shrike; Pinyon Jay (increasing); Red Shafted Flicker (not observed since the 6th); Brewer Sparrow; Western Redtail Hawk; Golden Eagle; Say Phoebe; Gambel Sparrow (escaped from gathering cage); Brewer Blackbird; House Finch; Rock Wren; desert Black Throated Sparrow; Meadow Lark (Western?).

470 ANIMALS

Sallie reported five head of antelope near Merriam Crater on the first.

Tony Richardson saw seven head between Wupatki and Sunset Crater.

On the 16th our road was obstructed by a porcupine who refused to move; I got out to take his picture, which of course proved he would move if I wanted him still.

900 General

After many hours of coaxing mileage, after much uncertainty about ever getting back, the pickup has finally gotten beyond my control. One by one the plugs quit, until none could produce a spark of encouragement. I pulled the timing system apart and put most of it

back where it belongs, but must have misplaced something because when I turned the motor over it burst into flame and I had to use a fire extinguisher to save it. I think now I should have saved the fire extinguisher. But then maybe we can get some replacement parts from the National Museum.

With this thought in mind Sallie, her brother Jack, and I proceeded to tow the remains to Flagstaff with Sallie's car. Three miles from the Pueblo the strain began to show on the roadster; around the next corner the fuel pump went the way of the tow-ees sparks and we were afoot. We worked over it until noon but, because of the bad company it was in, it too refused to function. We finally walked back to the Pueblo and lunched; then Jack, who had to return to Tucson and school that day, walked to Highway 89 (14 miles). He got a ride and located Don and Marie Erskine who helped us to town and rehabilitation of Sallie's car.

NAVAJO EXHIBIT

The area selected for the Navajo Exhibit lies directly south of the quarter corner marker on the north side of Section 30, T 25 N, R 10 E. Fingers of Moencopi sandstone hide this site from the Monument itself; it is in a natural basin with an inconspicuous opening into Deadman's Wash on the northeast. Here is little vegetation (typical Navajo country). The floor of the basin is a mixture of cinder and sand. In the west central part of the floor the hogan will be constructed. This will then naturally face the display area to the east. The pine posts are now on the ground and as soon as a couple of forked pines are hauled in and peeled the hogan will be built. Some juniper posts have already been hauled to the site and are ready to use in constructing brush shelters. I am trying to get some pine siding with which to build portable rest rooms that can also be used as Monument property during the balance of the year.

I have reclaimed the three road signs furnished by the MNA to indicate the Monument boundaries and lay down the law; I intend to repaint them and place them at the highway on the days of the exhibit.

Here I'm going to turn things over to Sallie who will tell you something about the exhibits and prospects.

I've been very cautious, even in my private expectations, about the quantity and quality of the exhibits in this first attempt; we probably won't know two weeks before the date set whether we'll have 15 or 50 rugs. But we do know by now that our friends of Wupatki Basin completely understand our wish for a simple exhibit of the best craftmanship of the Navajos; there was some natural confusion at first with the more usual "see-the-strange-Indian-and-his-odd rugs"

type of affair, to which the Indian is brought by promise of payment, food, gambling, etc. We want to play on their interest and pride of workmanship, and offer them examples of good work, old half-forgotten crafts, etc., and a probable market for their products. Working from that angle, we won't have as many Navajos the first time as would come if there were horse-racing, etc., but we are sure that in the long run our purpose will be served much better.

Of course this is a busy time of year for them--lambing just over, and shearing to come--but the winter is a favorite time for weaving, and next year we hope they will have most of their exhibits ready before the flocks take most of their time.

The children have been the most active contributors so far; nearly every one of them seems to have some aptitude at leather work, carving, drawing.

The local medicine man has promised to bring some "old things"; we are anxious to have good examples of pots, baskets, old type blankets as well as newly revived vegetal dyes to show the Navajos; it is fun to see their interest in the things most of them have forgotten how to make. Van Valkenberg loaned an old dress which we haven't been able to keep as a surprise---by now I think everyone has been up to see it. Dr. Colton has offered to loan a few old blankets from the Museum; we would be very glad to get any such material. And we're hoping that any of you who can will come and see our "show."

P.S. The exhibition hogan will be a "5 and ½ axe hogan." The hogan usually built for nite dance or mountain chant is a "six axe hogan. The unit of measure being the length of an axe handle!

****

SUNSET CRATER

By James Brewer, In Charge

289 visitors registered at Sunset Crater National Monument this month; 1935, 273; 1934, no record.

States were represented as follows: California, 76; Arizona, 33; New York, 5; Illinois; Kansas, 4; Ohio, Texas, 3; Oklahoma, Washington, New Mexico, 2; vermont, Idaho, Indiana, Oregon, Rhode Island, Georgia, 1 each. Foreign countries: Poland and Belgium.

On the 15th Sallie, Jack and I drove to this monument to give it a spring cleanup. All cans, rags, bottles and litter were loaded into the roadster and hauled to Wupatki's dump pile.

We climbed to the Crater and while Jack walked around it I descended into the crater. When we met at the saddle on the west ridge each of us

had a collection of volcanic specimens and Sallie a collection of plants.

Jack took a fragment of each numbered specimen to Tucson where he will have them analyzed for our identification. After a cleanup at the minor squeezing-up we hauled our load to the Pueblo.

I hope to soon get into a huddle with Geologist Vandiver and order directional and informational signs for Sunset visitors enlightenment.

The cinders are very dry and roads are loose and bad.

****

WALNUT CANYON

By J. Donald Erskine, Park Ranger

The travel figures for Walnut Canyon for the month of April reached 647, nearly double the total for March. Education contacts were made with 360 of these, and contacts other than educational were made with 45 more.

The travel was mostly from Arizona and California with California showing 183 visitors to Arizona's 228. The rest of the travel was spread out among 23 other states and several foreign countries. The foreign countries represented were: Philipine Islands, the West Indies, Holland, Argentina, South Africa, and Poland which contributed a Prince and Princess S. Czetwertynsk.

We were honored by visits from quite a number of Park Service people. First to arrive were Dale King and his mother on April 6. On April 10 Wildlife Technician Russell Grater, Ranger Natt Dodge, Ranger and Mrs. Worley,all from Grand Canyon, visited the Monument. On April 13 Ranger Duane Jacobs and family from Yosemite were here. Then on April 16 Chief Ranger Brooks and Mrs. Brooks from Grand Canyon stopped to see the ruins. On April 17 Ranger-Naturalist Paul Nesbitt stopped en route to Yosemite. On April 23 ECW Project Superintendent Chase and wife from Bandelier National Monument were here while I was taking a day off to see the Grand Canyon. And then I suppose I should include the two visits by Sallie and Jimmie Brewer from Wupatki on April 9 and 19. On the 19th I towed Jimmie's Chevie in from Wupatki with my own Chevie. Jimmie, I'm sure, joins me in wishing that sometime the Park Service will feel inclined to buy some good cars.

The weather on the whole has been good during the month. Since the first week of April the days have been warm and sunny and apparently typical summer weather without the thunderstorms. The first two weeks of April were very windy with snow two days during the first week. The past week has seen cloudy but warm weather. During the bad weather I have had to pull two cars out of the mud on the East Entrance Road.

During the month I put up the official Park Service Entrance signs at both the East and West Entrance Roads, where they meet U. S. 66, and I think they will help travel considerably as they are much more readable than the old signs. Also the official Park Service warning sign was placed at the Parking Area where all must see it before going to the Lookout Point of the Ruins. The stand in the Lookout where the registration book is kept was painted green in the hopes that a darker color would discourage those who feel the urge to write or carve their names in improper places.

Since the weather has been nice many picnic parties have used the Monument facilities. Only one camping party stopped during the month when three girls from California spent the night in the camp ground April 7. Also a picnic party appeared one night at nine o'clock and stayed until after eleven. On April 9 in the afternoon I was at the Lookout when I heard the strains of a beautiful chorale coming from the direction of the Ranger Station. Upon investigating I found the A Capolla Choir from Arizona State Teachers College practicing in the little canyon in front of the Ranger Station. They were rehearsing the numbers they were to use at the Easter Sunrise Service at the Grand Canyon. It was a real treat to be able to hear them, and to meet the Director, Eldon Ardrey, I wish they would come every week, as both Marie and I are very fond of choral music.

On April 16 a request from the Stafford Grade School at Stafford, Kansas, was answered with a letter describing Walnut Canyon and the National Park Service.

Unless we have more rain or snow within the next month, I'm afraid that Paul will have to haul all his water from town. On April 2 I went down into the cistern to investigate the water depth, and found it only two feet deep, and now it is only one foot deep. While down at the bottom I removed a mouse that had fallen in. Incidentally we are not using cistern water for drinking purposes.

Also while on the subject of water I might mention that the ground cover now is very, very dry. Yesterday, April 24, I noticed smoke rising in the west about one o'clock. It looked very distant, so at first I paid no attention to it, but as it grew steadily worse I decided to investigate. My phone being out of order it was necessary to go to town to find out from the Forest Service where it was, and by that time it had swelled to large proportions and seemed to be up Walnut Canyon several miles from the Monument. After ascertaining its location, I hunted on many side roads until I found the head of the fire. The Forest Service had had men on the fire since eleven in the morning, but they hadn't sent enough men at first, and it got out of control when the wind came up in the afternoon. About the time I arrived two loads of CCC boys arrived. By seven o'clock last evening the fire was entirely circled and fairly well under control, so I left it to the Forest Service men to finish.

The fire burned over at least 500 acres and burned to within a short distance of Walnut Canyon about two miles above the monument. With the high wind I was somewhat worried that it might reach the Monument, but about six in the evening the wind died down and the fire with it. The cause of the fire was a burning truck belonging to a wood-cutter, who was badly burned himself in attempting to extinguish the truck.

Bird banding this month shows very meager results with 1 Shufelt Junco, 4 Red backed Juncos, and 1 Pigmy Nuthatch being banded. As yet the birds are not entirely dependent on us for water, so I haven't thought it wise to set up the water trap. However, more are coming for water each day, so It will soon be profitable to set it up.

The Sparrow trap is worthless now, as a pesky chipmunk chases the birds from it each time I bait it, and then promptly gets caught himself. At present most of the water I put in the bird bath is consumed by hundreds of bees.

The nature notes I have put down are as follows: March 27 a coyote seen on the East Entrance Road; March 28 Chestnut backed Bluebirds first seen; April 8 several Rock Wrens were seen in the canyon; April 9 saw many Violet Green Swallows and White-Throated Swifts flying in the canyon; also April 9 a Goshawk flew low through the trees in front of the Ranger Station; also April 9 I noted many lizards and several horned toads, with the numbers increasing daily since; April 11 an unidentified hawk sat in the bird bath for a half hour; April 15 saw several Slender-billed Nuthatches, a pair of Mearn's Woodpeckers, and a pair of Ruby-crowned Kinglets drinking at the bird bath; the same day a state highway patrolman reported seeing a Wild Turkey on the East Entrance Road; it occurred to me that the Robins must be mating now as they sing until quite late; April 16 two Lewis Woodpeckers drank at bird bath; April 17 several Western Chipping Sparrows were seen foraging in the back yard of the Ranger Station; April 13 I went to the bottom of the canyon and saw a pair of Spurred Towhees (have never seen them on the rim). The canyon wildflower display is just coming in and another week should see many more flowers out.

In closing I feel a deep regret that this will be the last report I will be privileged to make for Walnut Canyon. Marie and I have grown to love it here, and will be sorry to leave when we are relieved next week by Paul Beaubien.

****

SAGUARO

By Paul Beaubien, Ranger

Haven't much to report this month, and I've been interrupted a lot trying to do that. Two of this morning's visitors, Mrs. Dorothy Disney MacKaye and Mr. Milton MacKaye, are authors, and were here to learn more about cacti and rangers. Mrs. MacKaye has a serial beginning soon in the Woman's Home Companion, while Mr. MacKaye's stories

have appeared in Saturday Evening Post, Redbook, etc. In a story nearing completion, Mr. MacKaye has a ranger arrest the villain for mutilating a saguaro. I suggested it would be better to have his villain arrested for shooting a deer. They departed promising to talk with you at Casa Grande, to find how "tough" a ranger should be.

Heard sometime ago that Dr. Shantz had been asked to prepare an article on the Cactus Forest for the National Geographic Magazine.

In regard to travel statistics, 681 visitors reached the ranger station, and 488 are listed as educational contacts. Probably, 1200 visited the monument. Since warmer weather, the steady "repeats" are finding a cooler place to picnic. It's unfortunate that the winter visitors did not see the desert in bloom. Some of the more showy plants are now at their best, but most easterners have departed. Have had only a car or two a day recently, but today, with some clouds and cooler weather, I've had six parties.

A few days ago, I visited a large Hohokam site, commonly believed to be on land included in the National Monument. Some one has excavated a few rooms, but there are still acres to protect or dig. I had been told there were lots of pictographs nearby but I only found a few in the short time I spent there.

Of interest also are some old lime kilns about a fourth mile southeast of the ranger station. Local informants say they were operated by soldiers when Camp Lowell was moved to a new site in 1873. (Camp Lowell became Ft. Lowell, 1879). The kilns present the same appearance as the lime kiln at Tumacacori National Monument.

****

TUMACACORI

By Louis R. Caywood, Acting Custodian

During the past month visitor travel was heavy, with a total of 1,700 to the Monument. Of this total, 1,542 received guide service while 158 used only the facilities of the Monument. Forty-two states were represented, also five foreign countries; namely, France, Italy, Mexico, Canada and Scotland.

As Tumacacori lies on the International Highway, U.S. 89, the direct route to Guaymas, Sonora, a winter playground for American tourists, it is here noted that a great many of our visitors had been to Mexico or were contemplating visiting our southern neighbor. Also a great number of Mexican visitors from the states of Nayarit, Sonora, and Sinaloa visited the Monument on their way to or from their homes in Mexico.

During the month two important events were held at Nogales which attracted many visitors to that border town and incidentally to

Tumacacori Mission. One event was Frontier Nights, a bang-up celebration of the days of '49. All Nogales, both Arizona and Sonora, male citizens let their whiskers grow long and fancy and packed around young cannons while the female citizens wore the voluminous skirts and pantaloons and petite hats of the old days. This affair last from April 15 through the 19th. The other event was the 45th Annual Convention of the Arizona State Medical Association. Two hundred and fifty-eight attended this convention, which is said to be the largest number of delegates in the history of the state association. Governor B. B. Moeur addressed the convention on April 25 and on that day 75 physicians departed by special train for Guaymas, Sonora, to continue the convention on the Gulf of California.

On April 8 we enjoyed a very pleasant visit from the Boss and Chief Engineering Aide Tovrea of Headquarters. Both were a big help in showing us some of the fine points of architecture in the Mission and our only regret is that they couldn't have stayed longer. I know the Boss will say that we're never satisfied.

Other important visitors of the month were as follows: Paul Beaubien of Saguaro National Monument and his parents. Paul is our nearest Park Service neighbor and we wish we were able to see more of him. He brought some exotic cactus from Saguaro which I planted in the Cactus garden here at the Mission. Dale King of the Headquarters staff brought his mother down to see the border town and the Monument. We enjoyed their visit very much.

Mr. Frank Van Vleck of the Navy Department, Washington, D. C., was an interested visitor on April 2. Dr. Homer L. Shantz, President of the University of Arizona, and Mr. Leo Borah, a member of the editorial staff of the National Geographic Magazine, spent a short time seeing the Monument on April 6. Three officials of the Mountain States Telephone and Telegraph Company, Mr. A. R. Grosheider, Secretary and Treasurer, Denver, Colorado, Mr. H. D. McVay, Arizona Manager, and Mr. A. A. Sundin, District Manager, Tucson, were also Mission visitors. Mr. and Mrs. H. F. Brett of the U. S. Veterans' Facility, Legion Texas, Winnie's mother and dad, were our guests from April 11 to the 17th.

On Sunday morning, April 19, the windmill failed to pump anything but air. Examination of the well proved that the cribbing had fallen in and loose pieces of rotten wood had gotten into the pump valves. Lumber to make new cribbing was bought in Nogales on April 20 by Ranger Evanstad and arrangements were made through the courtesy of Mr. O. Smith, Chairman, Santa Cruz County Board of Public Welfare, for four men to report April 21 to clean the old cribbing and loose dirt out of the well and replace this with new cribbing. Four days were spent on this project and a very good job has been done under the able supervision of Ranger Evenstad.

Again the deathless germs begin their lives anew: A letter recently received from Dr. Ira B. Bartle of San Luis Obispo, California, thanks us for allowing him to take samples of adobe to see if they contained spores. Following is an excerpt from his letter:

> "A vigorous growth developed from the sample under the belfrey, in 24 hours with 94 colonies and 131 colonies in 43 hours. The samples from the Mortuary were much slower growth and of a greater variety of bacteria."

Now for our bird banding activities. Twenty-six new bands were used this past month in banding the following:

Arizona Cardinal	8
Canyon Towhee	3
Greentailed Towhee	1
Bendire Thrasher	2
Say Phoebe	4
Western Mourning Dove	1
Gambel Quail	1
Gambel Sparrow	1
Western Lark Sparrow	4
Cactus Woodpecker	1

With the coming of nesting season banding activities will be discontinued for the present.

****

CHIRICAHUA

By Wm. Stevenson, Project Sup't.

Following is the monthly travel report for April.

During the month 550 visitors arrived in 150 cars. Twenty-two states and Canada were represented.

Travel was very slow during the first half of the month due to light snows and cold weather. However, since Easter, many tourists have been taking advantage of the camp grounds for overnite stops.

********** **********

CHIRICAHUA E.C.W.

By Wm. Stevenson, Project Sup't.

I herewith submit the following report for the month of April:

Work was discontinued on the Massai Point-Balanced Rock trail April 10 due to shortage of men; however, 600' were completed this month, making a total of 1600'. Echo Trail is now completed for 6000'.

Poles and wire are on the ground for the Massai Point-Portal telephone line. Two and a quarter miles of poles have been set this month.

Planting in the camp ground and adjacent areas was continued for first half of the month. Seventy trees have been planted to date.

Excavation for buildings in utility area was started April 23.

Seventy one enrollees are due in today and will be available for work projects shortly after May 1.

Hub and Mrs. Chase of Camp NM-1-N, Bandelier National Monument, New Mexico, were here April 17-19 for a most welcome visit.

****

CAPULIN MOUNTAIN

By Homer J. Farr, Custodian

In reporting the activities of Capulin Mountain National Monument, for April, I submit the following:

Visitors:

Approximately 600 visited the Monument. I have noticed several from St. Louis, Tulsa, Oklahoma City, and some from Chicago. For some reason or other Capulin Mountain appears to be going in for "big town" visitors. In spite of the road being in poor condition, all visitors go on to the top this spring and mostly take the trail and go around the rim. This is largely due, I suppose, to the fact that the weather all this month has been just like summer.

Weather:

We have had exceedingly warm and dry weather all thru the month with only about three windy days. I believe the average temperature for the month to be fifteen degrees warmer than the average April. Although nothing is getting green, this is due solely to the extreme dryness.

Roads and Trails:

The road is in poor condition caused by the constant falling or sloughing of rock and cinders and ash. The trails are in splendid condition, and the camp sites and camp stoves are also in excellent shape. It might be mentioned that the trails are all directly on top of the rim and they keep in good shape. The camp sites have been used a great deal this spring.

The Custodian promises at least two or three days with team giving the road a much needed dressing this next week. Although funds are not available for this work, it must be done and I am just the boy to do it.

In the early days during the gold rush in Colorado, miners would work in the gold mines at half price and sometimes apparently for nothing, carrying out their pay in their shoes in gold dust. I have done the same thing on Capulin Mountain, except mine so far has mostly been cinders in my shoes, but I have enjoyed it just the same.

****

PIPE SPRING

By Leonard Heaton, Acting Custodian

Time for a report to be on its way to your office to let you know the ups and downs we have been having here at Pipe Spring. Since the last report our weather has been very changeable. The first week we had snow, sleet and rain, and a lot of wind; then we had some very warm days which lasted a week or so; then again cold days and some stormy weather, but not much storm.

On the 31st of March we had one of the hardest wind storms that I have ever experienced at this place. Commencing about 7:00 a.m., the wind began to come up and by 9:30 a.m. it was so hard and so much dirt being moved that one could not very well get around outside. The ponds that evening were as red with dirt that it looked as if it was nothing more than flood water.

I believe the height of the storm was about 1:00 p.m., when a section of the roof of the upper house was blown off. It was not just the taking of the shingles or a few of the sheeting boards, but one third or more of the whole roof in one piece, carrying it up over the tower, breaking off the flag pole and then on over the east chimney knocking off a dozen or so brick and then landing it almost down to the east rock cabin. There it was pretty well broken up. After this happened I got busy and with heavy wire, nails, boards, and hammer I went to work and tied the rest of the roof down to the ceiling and rock walls, as at times the rest of the roof would raise an inch or so from the building. I believe I have the roof tied down now so that the wind will have to take part of the rock to get the roof again.

I have everything back except the flag pole. Intend to stain the new shingles to take the newness off.

I have not had any CCC boys working on the Monument since March 24, when they finished up the Diversion Ditch, Boundary Fence, grading the Parking Area, and what they could do on the walks. It seems that Mr. Draper has the idea that the ten men were for the sixth period only and not for the duration of the camp, but I believe we will be able to get the men back again now that we have had a talk with him, and especially if we can get the money to buy the material needed for the different projects.

I will get another letter off to you regarding the visit of Mr. Wirt and Mr. Keeling and the ECW work.

I have enjoyed the bird banding work up here very much and have a page of the nature notes for the month to add to this report.

We have had several very interesting visitors this month. Among the ones that I conducted through the fort were: Mr. and Mrs. W. H. Wirt, ECW inspector; Major and Mrs. Swift, CCC Regional Commander; Captain Shrivey, new camp commander here at Pipe; Mr. Hendrix, State Superintendent of Public Instruction of Arizona. A party of the Coconino County officials were very interested in the Powell monument and Indian ruins here and said that they would do what they could to get them put into the Monument area.

Total contacts for April, 96. Local travel I estimate at 530 (have not kept a close count on the local travel). The road is in very fine condition now and it will be so that one can get through in most any kind of weather.

On March 29 about 100 of the CCC boys were shipped home, as their six months were up. This left in camp some 70-odd boys who signed for another six months. On April 18, a new bunch of boys came in, making the camp now 156. Also a new captain was sent in, Captain Packer being transferred to a Nevada camp. Captain Shrivey seems to be a very agreeable man, and I believe there will be little or no trouble between the camp and monument, as he has already expressed him self to the effect that he will cooperate in any way to meet the wishes of the monument to preserve the vegetation and even wants to plant grass, flowers and cactus, if we can give him the water. I told him that I did not think there would be enough to do any great amount of planting, but I would do what I could to get some water for part of the ground.

The Army is now working like beavers to get the meadow pond in shape for a swimming pool. It is being lined with flagstone rock and cement in the cracks, so it ought to be almost water tight. There is only one thing that I don't approve of and that is the placing of the rock upon the banks as the lieutenant is planning, but I can see his point of having something for the boys to stand on so that they will not track so much dirt back into the pond. What I have asked him to do is place the rock not higher than the water level and let the grass and weeds grow up to cover the rock edges.

Yesterday, April 23, the Utah ECW Division of Grazing sent in a bunch of trucks and truckdrivers, and they hauled out everything that belonged to the ECW even to the office supplies that had not been used, and all broken tools; in fact, they have not a thing in which they can work with, and it is not certain when new or old equipment will get in here so that boys can go back to work. The headquarters for this ECW

camp is now in Albuquerque, New Mexico.

The trees in the camp ground are beginning to show signs of life and I do believe that I am going to get a large number of grow. It is a little early as yet to say how many are growing, and how many I will have to replant next year.

I have added to the museum collection an old wood chisel, and have the promise of the photo of Duddly Levett who with Amon Tenny and Bill Hamblin gave the name of Pipe Spring to this place in 1856. I have also gotten the cooperation of the President of the Daughters of the Pioneers of Kanab Camp to put in a good word for the Pipe Spring Museum and have convinced her that this place is the most likely place for the old pioneer furniture and relics. I have at every opportunity asked and mentioned the museum at Pipe to old-timers and about different pieces of relics, so maybe we can get it furnished as we want it.

Bird Notes:

I commenced trapping for birds March 31, with two Government sparrow, one woodpecker, and a warbler trap. I have also made one three-leaf-clover trap and started a four-compartment trap.

These traps I have had set in the meadow and by the old Fort. To date only the sparrow traps have caught anything of the birds traped. I have banded 43 Gambel Sparrow, 1 Nevada Savannah Sparrow. There were several birds, mostly sparrows, that I could not determine their names so I let them go.

I have had seven repeats of the Gambel Sparrows so far. Most of them have drifted further north, and other birds are coming in. The only feed that I have been using is some of the table crumbs from the CCC Camp.

The Flycatcher is back and is making a nest in the Old Fort, this time in the east room downstairs of the lower house on some braces of the ceiling joist. Also another nest is being made on the lower porch.

Did one good turn yesterday for the birds: made a killing of seven cats. Found a nest with one old cat with six little ones so finished there on the spot. Most of the dogs have been disposed of;one hound still stays around, however. It has been taken off several times but keeps coming back, and I haven't a gun to keep it away.

Would like some cards, about two dozen, date file and 100 band number file cards.

Lizards are coming out and have tried to identify some of them, but there are so many descriptive words for each lizard that I have about decided to leave the lizards to some one else to name. When it is the

classification I can get that, but the genera and names given to them---well I just can't get it yet. If you don't need the lizard book for a few weeks, I may get so that I can read the description of the lizards and name some of them.

A few snakes have been found by the CCC boys and killed for the skins, which they send home or put on their belts.

****

CHACO CANYON

By Thomas C. Miller, Custodian

General:

The approach road to the south has been passable all the month with some maintenance and construction by the Indian Service. The approach road on the north has been impassable part of the month because of the blow sand north of Escavada Wash.

The Custodian attended a meeting, by invitation, held at Farmington by the Chamber of Commerce on the 21st. Governor Tingley and members of the State Highway Commission were present. I believe much good will be done to our road. The State now has machinery and men working on the road. The Indian Service agreed to put four dump trucks on the sand bed, hauling shale and building up over the sand dunes. At this time the road to the north is in better shape than I have ever seen it. This will increase our travel 50% from the north.

Weather:

The last five days in March and the first few days in April, we had our part of the wind storms. The Monument has more sand beds, caused by blow sand, than any time in history. After the wind storms the weather has been excellent.

Weather Statistics: Maximum temperature 76, on the 15th; minimum 11, on the 2nd; precipitation .21 inch of rain and melted snow was recorded for the month.

Travel:

791 people arrived in 98 automobiles, trucks and school busses. Coming from the following states: Arizona, California, Colorado, Conn., Kansas, Maryland, Minnesota, New Mexico, New York, Pennsylvania, Okla., Texas, Tennessee, Utah, West Virginia and Washington, D. C. Museum and guide service were rendered to 210 people in 29 parties during the month.

Meeting with Indian Service Officials:

A meeting was held in the Monument at Mocking Bird Canyon with Indian Service officials on the 10th. The purpose of the meeting

developed from a request made by Mr. Ed Sargent to the Indian Service that the Indians would have to be removed from his driveway on Section 22, the land belonging to the National Park Service, on which Mr. Sargent has a driveway for his sheep. It seems that the Indians were making Mr. Sargent pay from $30 to $50 every time he crossed this driveway with his sheep. It was learned at the meeting that the Indians were not charging Mr. Sargent to cross the Monument land, but were charging him to cross Section 14, just outside the Monument boundary. It seems that these Indians at one time owned this section of land, then in 1932 their allotment was cancelled in an exchange of lands with the Railroad Company. Mr. Sargent has the land leased from the Railroad Company. The Indians have lived there all their lives, have their homes and farms there, so they thought they owned the land. Officials present at the meeting were: Mr. M. Ratcliff, in charge of lands on the reservation; Mr. John Tyler, stockman; Mr. Marvin Long, senior clerk, Indian Service; and the Custodian of this Monument. It was strictly an Indian Service problem, and other than being present I took no part.

Special Visitors:

Dr. R. G. Fisher and Professor Stanley J. Milford, University of New Mexico, arrived on the 11th, and departed on the 12th. Mr. Hugh. C. Lewis, Department of Grazing, with headquarters in Salt Lake City, Utah, was a monument visitor on the 11th. Mr. A. E. Stover, Eastern Navajo Agency, and party were here on the 11th. Mr. Ed. Sargent, rancher, and also member of the State Highway Commission, was here on the 16th. H. M. Land, post office permit inspector, was here on the 17th.

Visiting Park Service Officer:

Custodian Jackson and family, Bandelier National Monument, was a visitor on the 21st.

Activities of other Agencies in the Monument:

The University of New Mexico began construction on their headquarters building south of the Chaco Wash on the 13th. Formerly our water system at this monument was furnished by the University, that is, the Custodian's residence and the public camp ground, has been furnished with water from their well. In order to put water to their new headquarters building, with the pipe that they had on hand, they took up their line. We are now hauling water from the Government well, a distance of a quarter of a mile. We are badly in need of a water system at this time. We have enough water in the well, but no money available to pipe the water to the Custodian's house and the public camp ground.

The Soil Conservation Service has been working in Hungo Pavi Canyon this month. Much has been accomplished on erosion control.

Boundary Fence and Cattle Guards:

Regular inspection trips have been made by the Custodian. The fence has not been molested this month other than a few of our 17 gates have been left open. It was necessary to make trips on horseback to move stock out of the Monument and close the gates.

The two cattle guards on the main road through the Monument are fast becoming bridges. The one in the Gap on the south is almost leveled up with blow sand. These cattle guards were built by contract and there were no provisions made in the plans so that they might be cleaned out. It will be necessary to drill holes through the concrete head walls, large enough that the sand can be shoveled or raked out.

Yucca House and Hovenweep National Monuments:

After the meeting at Farmington mentioned elsewhere in this report, I inspected these monuments and returned to Chaco on the morning of the 22nd. Found everything in good shape. From evidence found around the ruins the early visitors havebegun to visit those places. The roads were pretty good.

****

MONTEZUMA CASTLE

By Martin Jackson, Custodian

Weather:

Good weather conditions prevailed throughout the month, few cloudy days with some snow on the mountainous regions nearby. With the Easter vacation period ideal weather greeted the large crowds traveling at that time. Spring-like days are still holding out and so far we have had no complaints of hot weather.

Roads:

In general the roads have been excellent during the month. The roads in the valley proper have been even better than usual while the road up Oak Creek Canyon has been beyond reproach. However, the section of the State Highway 79 between Jerome and Prescott, one of the main arteries into the valley, has been in almost impassable condition during the full month. Had it not been for this, our total of visitors would undoubtedly have been much higher. It is thought that this section of road will not be completed before another three weeks or month.

Visitors:

The total number of visitors for the month numbered 1,054, 563 of which made the Castle trip.

Special Visitors:

Ranger D. D. Jacobs and family of Yosemite, California, Cashier

James Luther and wife, Carlsbad, New Mexico, and Dale King from Headquarters were with us during the month. Dale's trip, an inspection tour, occurred on April 6.

General Cleanup

During spare time and after hours during the month our regular cleanup of the grounds in the Castle and Picnic areas was undertaken ana accomplished. At present writing the grounds are in very presentable shape to greet the expected great influx of summer visitors.

Facilities

The picnic tables on both the lower and upper picnic grounds are in process of being painted at the present time. We have received signs from Bandelier quite recently and have erected most of them. We are still awaiting, however, sign posts from the Coolidge office to replace destroyed signs at neighboring road interesections. We hope these will be forthcoming before the summer season is upon us.

Irrigation

Irrigation of shade trees around permanent buildings has been begun during the last month. This rather meager supply will probably help some but as I have mentioned before, the present water system is too small (and antiquated) to do full justice to the needs of the monument. It is hoped an adequate water system will be established in the near future. If this is not done the work of planting all the trees in the immediate area of the permanent buildings, will be wasted as the present system will not take care of both the needs of the visitor and that of the trees and other vegetation.

Vandalism

The name RUTH (the "H" not crossed) was scratched in the plaster of one of the rooms in the Castle during the past month. The name was inscribed on or before April 20, 1936, and can be practically placed either the afternoon of the 19th or 20th. Since receiving notice from the Department of Justice in Phoenix, that they are charged with the duty of investigating violations "of the law on Government Reservations," we will, with the permission of the Coolidge office, turn this matter over to them at once. Unless some example is made of one of these violators there will be vandalism from time to time that is unavoidable.

****

AZTEC RUINS

By Johnwill Faris, Custodian

Again the visitor record scores with one of the best like months since 1930. Visitors for the month total 701, and the same month in 1930 we showed 814. Figures for the years 1933, 1934, and 1935 were

468, 579, and 554,respectively, so we are quite proud of this year's showing.

Things have been moving along in good shape at the Monument. We started the month out right with a visit from Dale King, which also included one of these much dreaded inspections, and instead of it being dreaded in the future we are actually looking forward to the next one that we might see how much better we can present our show than we did the last time. Both Mr. Hart and I welcome these regular inspections and certainly do not feel that your office is snooping into our field. Our Monument benefited materially from the last one (or shall I say the first one), and we trust that each one shall point out a feature that we can correct and thus enable us to become that much nearer the standard that is the goal of the monuments area.

In addition to the inspection that Dale gave us, his visit was certainly worth while since it gave us an opportunity to go over much of our museum work and get it lined up for the summer season. We were still thinking over Dale's visit when Mr. Moffett from the San Francisco office drove in with several new case displays for the Monument. These were set up and in operation only a few days after they arrived, and we are testing them thoroughly and acquainting ourselves before the regular season hits us. We are very well pleased with them and instead of making it more difficult to explain the features as we imagined they might, we find that the new displays are working out fine, and that it is possible to get even a clearer picture across than it was before. Again Aztec takes its hat off to the boys in Berkeley and admits that they know their stuff.

We enjoyed Mr. Moffett's visit very much and hope that they send out their men quite often. In addition to meeting some splendid fellows we get a great deal of information first hand and realize the purpose of the displays and what they are intended, making it a great deal more simple to explain. We, meaning both Mr. Hart and myself, were scared to death of the history case as it first presented itself on paper, and upon installation we find that it is one of the most interesting cases in the museum.

This month finishes up the work of the ECW and we benefited greatly from the work here. As you mention, the sewer is the greatest benefit, but then the other work is of lasting benefit and enhances the value of our monument considerably. These past few weeks have been spent in general cleanup and rocking some of our ditches. Both of these items are needed badly about this time of the year, and the boys helped out a lot.

We are thinking about our parking area and hoping that we can get it completed before the visitors start coming too fast. There are several methods of doing it that we are considering at the present time; as soon as we decide on one, I guess that there is nothing to keep us

waiting very long for the completed unit. This, too, will be a big help to the monument and a need that is certainly being of long standing.

We were honored this month by a visit from one of our colleagues in the Service. Earl Jackson, Betty, and Mr. and Mrs. Morris were in for a short visit. We greatly regret that they could not have lingered longer, but realize that they wanted to get back to their own monument. It is ashame the way we custodians feel that our monuments will fall to tiny bits if we are not right on the ground almost constantly. Anyway, Boss, they are our babies and we just can not help worrying about them.

This month also brought us a visit from the Governor of the State of New Mexico, and the party that accompanied him on his tour of the northern part of New Mexico. The Governor has been very kind in his mention of our attraction and never comes by this section that he does not come out if only for a few minutes. We are proud that he feels this way about it and trust that we merit the consideration that he is giving us. In several of his speeches he has mentioned the Aztec Ruins and their value to the State.

We are in the midst of one of our prettiest seasons of the year right now. The numerous orchards in this section of the country are all in bloom right now and it is simply beautiful to see.

We have promise of some oiled roads in the county and since the State of Colorado is also planning a big road program of this section of its state, I feel that within the next year or two we might normally expect a large increase in the number of visitors.

Must get to other things, Boss. I am planning to make an official trip to the towns of Albuquerque and Santa Fe, and find, in order to attend certain meetings, that it is necessary for me to leave Sunday and I have a lot to do yet. Will write you in detail as to the results of this trip. It has promise of being very worthwhile to the monument, and I trust that I shall find this to be true.

****

CASA GRANDE

By W. J. Winter, Custodian

The visitor count this month was 3,436. This seems to be somewhat higher than usual. It includes the following special groups:

March 27 - 24 in University of Arizona baseball squad.

April 3. - 36 of Social Science class of Pima Indian school at Sacaton.

April 3 - 60 of beginning archeology class of University of Arizona, Tucson.

April 7 - 20 2ith J. W. Lesueur of the Mormon temple at Mesa.

April 9 - 100 in a motorcade promoting U. S. 80, "The Broadway of America," en route to a convention in California.

April 11 - 23 from the Roskruge School of Tucson.

April 12 - 175 attending the Easter sunrise service held at the ruins by the churches of Coolidge and Florence. This was not as well attended as in previous years because of the number of other similar services being held within a radius of 60 miles.

April 17 - 20 from the Juvenile Detention Home in Phoenix. So-called bad boys, but really not so bad as near as I could tell. In fact, I rather enjoyed showing them around.

Only one NPS visitor is recorded. Ranger D. D. Jacobs of Yosemite stopped to see us April 3. Of course, a number of others were in, but were calling on Headquarters, not the Monument.

A few other newsworthy visitors were noticed. March 26 we were visited by James E. Van Zandt of Altoona, Pennsylvania, National Commander of the Veterans of Foreign Wars. April 4 we met Colonel Frank Van Vleck of Washington, D. C., one of the founders of Sigma Xi, honorary scientific fraternity. April 13 we were pleased to greet W. B. Hare, climatologist of the U. S. Bureau in Phoenix. April 18 we were very glad to meet Charles Amsden, Secretary of the Southwest Museum of Los Angeles. April 19 there came John C. McGregor, Curator of Archeology of the Museum of Northern Arizona, Flagstaff. This custodian was not around while he was here and was mighty sorry to have missed him, as we are old schoolmates.

The weather warmed up a bit this month, reaching a maximum of 103 on the 17th from a minimum of 28 on the 2nd. Precipitation was zero.

Perhaps I should have listed this under "Newsworthy Visitors:" Our first rattlesnake of the season showed up in the ruins on April 7. Since there were so many visitors around he was speedily dispatched without ceremony. We hope to catch alive any more that show up, to be used for study purposes elsewhere.

Speaking of sneks, Ranger Charlie Steen returned April 14 from seven days' leave, spent in the old home town. We missed him considerably. Charlie says he missed us too, as around home he had to be polite to everybody. The afternoon of April 17 Charlie gave a talk to the third grade pupils of the Coolidge grammar school. Not having had much luck with the run of visitors that morning, Charlie said it would be a pleasure to talk to the third grade in the afternoon. I guess it was. The subject of the speech was "Birds" and I hear that Steen went over big, as he usually does.

The middle of the month was an occasion of great mourning around this Monument on account of the departure of Al Bicknell. Al's monument, Craters of the Moon, in Idaho, is emerging from its winter's hibernation under the snow and Al had to get back to shine things up in preparation for the summer tourist season.

The staff here is unanimous in wishing that Al could stay longer, permanently, in fact, for we think that he is the greatest asset this monument has had since the Boss moved up from the Custodianship. In addition to his practical capabilities we think that he is a swell guy personally, so surely are hoping that he returns next fall.

Took another day off this month (but perhaps we should keep that dark!) and went up the Apache Trail to visit Tonto National Monument. We arrived rather late in the evening and were sorry to miss seeing Woody who apparently had gone out to supper. We did have a look at the cliff ruin and I was glad to renew my acquaintance with the place, it having been seven or eight years since I last saw it.

This completes the list of monuments that can be visited on our days off. Others are too far away for a one-day trip so it's hard telling when we can get to see them.

We have finished Bob Rose's question survey but will let him do the talking about it as he conducted it for several monuments in addition to this one. I suppose that the dumb questions make the greatest impression on us, so much so that I was somewhat surprised to find that the great majority of questions were intelligent enough. It was, however, noticeable that many questions were asked after they had already been answered in the guide's talk. This was true with all guides. We used to charge this up to lack of intelligence on the part of the visitor, but upon considering the matter we have agreed that we really should not blame the average visitor for failing to assimilate the terrific mass of information with which he is deluged in such a short time.

Now for the monthly gripes about maintenance, inadequate appropriations, etc. I did not begrudge spending money getting our well pump fixed. New leathers were installed March 27 and water is now being pumped with considerably less loss of energy and time. I did hate to put more money into our electric plant, however. A new armature for the Kohler was necessary March 31. The money that we have spent on that plant this fiscal year was enough to pay for electricity for twenty years, at present rates, if we were hokked on to the line that runs by our fence.

Our other complaint, now chronic, the sewer system, is still very much with us. The atmosphere around the public contact area is pretty bad when the wind is from the direction of the ditch. I have oiled the open pools in an effort to keep down mosquitoes but still have many

misgivings concerning possible health conditions when the weather gets hot.

****

TONTO

By Woodrow Spires, In Charge

A few more months like this one will justify a new road and a few of the other well-deserved improvements, such as a museum, a permanent custodian, and an improved picnic ground.

This monument is so situated that it is practically midway on the Apache Trail loop trip. Therefore people plan their picnic luncheons here. Several times there have been as many as three groups of picnickers here at the same time, which would make picnicking anything but a pleasure for two groups as there is only one shade tree on the parking area.

We could, for a small sum, fix up a very nice picnic area in the canyon below the cabin.

The travel and weather have been going along arm in arm until the last week when they must have had a falling out as there was a rise in temperature and a decline in visitors. Notwithstanding the last week, the month's total is 7.8% over the same period last year. The following figures are derived from SWM Stencil No. 16:

Total visitors at the Monument	876
Total time guiding	6,890 minutes
Total visitors taking field or ruins trip	546
Total time field or ruins trips	5,515 minutes
Total number of field or ruins trips	90
Average time field or ruins trips	61.2 minutes
Average group field or ruins trip	6.06
Total visitors museum trips	476
Total museum trips	88
Total time museum trips	1,375 minutes
Average time museum trip	15.6 minutes
Average group museum trip	5.4

Trips to the Upper Ruin were so few that I counted them as regular field or ruins trips.

This month brought more uninterested visitors than any pervious month since I have been here.

Lots of special visitors this month: March 29, Lt. French, M. D. Reid brought 60 CCC boys from the Superstition camp.

April 1, Custodian Winter of Casa Grande, accompanied by the H.C.W.P.

and her parents, stopped by but missed me.

April 3, Prince ShahMir, Tiflis, Cancasus, was an interested visitor.

April 4, Mrs. John F. Tanner and 60 students from the University of Arizona.

April 5, Dale S. King,Jr. Park Naturalist, stopped by for a visit and an inspection.

April 8, a Prince and Princess of Warsaw Poland were interested visitors.

April 15, D. D. Jacobs and family of Yosemite National Park stopped for a couple of hours.

April 16, Mr. & Mrs. James Luther of Carlsbad Caverns National Park were extremely interested visitors.

April 26, Mr. and Mrs. Elmer Rising of Harvard, at present illustrating the Snaketown dig for Gila Pueblo, were interested visitors.

The general work program for the month included the finishing and painting of the new latrines, the destroying of the old ocatillo fence and some cleanup work.

****

EL MORRO

By Evon Z. Vogt, Jr.

Business is picking up. This month's visitors total 42. This is no stupendous number, of course, but it looks pretty big to us considering that we had only 16 visitors in March and none in February.

Newsworthy visitors include Earl Jackson, Custodian of Bandelier National Monument, and wife, and Mr. and Mrs. Frank Vesely from Santa Fe. Mr. Vesely is New Mexico's Commissioner of Public Lands. I was certainly sorry to miss Earl Jackson. I wanted to meet him and show him El Morro. This monument is usually so isolated that we seldom are honored by visits from other custodians.

The weather has been generally fair all month and roads are in unusually good condition. The road to Gallup has been smoothed down by Indian Service and county graders. A crew from the Navajo Central Agency just finished grading up the road from Ramah to the El Morro Airport. This leaves only three miles of unworked road all the way from Gallup to El Morro, and this little portion is even quite smooth.

I am glad to report that the switchback trail up the north side of

the Rock is in good condition despite an unusually large run-off from winter snows. Last spring this trail was washed badly by the run-off, but the deepening of the drainage ditches last summer apparently prevented a similar occurrence this spring.

This is the month when all farmers in this region come out of hibernation and begin their struggle for existence for another season. Bean farmers, homesteaders, and Navajos all get out their plows and harrows and really make the soil fly. There seems to be an exceptional awakening in the Ramah Valley where one ambitious farmer has even plowed up the baseball field.

The reason for this is that the Ramah Irrigation Reservoir is three feet higher than it has ever been, and farmers in the valley expect a bumper crop. The Navajos are also breaking more sod than is usual proving that this Ramah Chapter of Navajos is an industrious and self-reliant bunch who are not dependent on the government.

Last spring I reported that the piñon business would boom this fall, and now I am quite sure that it will, for all the piñon trees in this country are heavily loaded with small cones which will bear nuts this fall.

****

NAVAJO

By Milton Wetherill, In Charge

I am enclosing SWNM-16, Visitors Report for March, which shows 31.

When I came up the first of the month.(March) I found that things were three weeks to a month ahead of last year at this time. The willows and Aspen are showing catkins, (flowers) and several other spring plants are in bloom.

Most of the Juncos have left, although I see a few Grey-headed Juncos. They are general the last to leave. One or two of the summer resident birds have come in but not many. Have been unable to get any banding done as the Chipmonks and Squirrels clean up the feed faster than it can be put out. (Will have to get 24 feet of 24-inch rabbit wire netting and put a fence around the traps).

Had our big snow March 22; started between one and two a.m. The first was a wet snow and melted almost as fast as it fell; snowed nearly all day. Would probably have accumulated 15 or 16 inches on the ground if it had laid on.

Trail work is slow but another week or ten days and the upper half will be finished. The switch backs on that steep rocky fill will help. I am afraid the goats will give us trouble as they do not care where they go.

Birds in Be-ta-ta-kin Canyon:

Woodhouse Jay		Shufeldt Junco
Longcrested Jay		Greyheaded Junco
Pinon Jay		Ravins
Clark's Nutcracker		Say Phoebe
Spurred Towhee		Flammulated Screech Owl
Tit-mouse		Red-shafted Flicker
Bush-tit		White-breasted Woodpecker
Canyon wren	Robin	Rocky Mountain Nuthatch

Banded two spurred Towhees, one Shufeldt Junco, four gray-headed Juncos.

****

BANDELIER

By Earl Jackson, Custodian

Visitors:

Visitors numbered 742, arriving in 214 cars, from 30 states, England, Toronto, and Montreal. Only 22 states were represented by cars.

The six highest states by visitors were: New Mexico, 468; Colorado, 91; California, 34; New York, 24; Illinois, 22; Texas, 14.

Visitor attendance is quite satisfactory, being by far the biggest April in history. As compared with travel figures of 643 for April of last year, we have an increase of 13.35%.

On three separated days during the month, I checked the percentage of return visitors. In 60 visitors there were 16 returns, or 26.66%.

Weather and Roads:

Days partly cloudy:	15	
Days cloudy:	7	
Maximum temperature:	77	April 14.
Minimum temperature:	17	March 25.
Mean Maximum:	58.77	
Mean Minimum:	32.51	
Precipitation:	.79	Against 1.03 for April, 1935.
Snowfall:	4"	March 30 and April 6.
Rain and Sleet		April 5, 18, 19, and 20.
Dust Storms:		April 16.

Weather has been mild. Snow melted within a few hours after falling. Only one bad dust storm occurred, with total limit of visibility at two miles.

Roads have been good, although slightly corrugated in places. At no time has there been difficulty of approach.

Visitor Trip Chart:

Seventy-four parties took the guided trip through the ruins, numbering 284 people. Average time per trip was 59.32 minutes. Nineteen parties, numbering 63 people, were given talks without ruins trips, or with only partial ruins trips, averaging 22.52 minutes per party. All visitors to the monument were contacted and registered.

Special Visitors:

March 27 - Lieutenant Cosgrove, Sub-District Commander, CCC, was in. He is a new man in the position.

April 3 - Warren G. Hubert, Science Department, a professor in the College of the City of New York, was in with his family. They were an exceedingly interested party.

April 5 - Fred C. W. Parker, Secretary of Kiwanis International, was in for an afternoon visit.

April 8 - Jack Diehl was in and out again on official business.

Lieutenant Colonel John A. Hoag, Field Artillery, U. S. Army, was in.

April 9 - Dale King and his mother were in for the better part of a day, and out again. As usual, Dale and I exchanged much speechifying, and we jointly took his mother through the ruins. She held up admirably under the strain of having two guides take her through, although Dale allowed me to do most of the orating.

Mr. and Mrs. Raymond V. Ingersoll, of Brooklyn, New York, were visitors.

April 10 - Mr. and Mrs. Charles G. Morris, of New Haven, Conneticut, arrived for a ten-day visit with Betty and I. They are my ancestors-in-law. He is an ardent bird and nature enthusiast, and she is quite interested in archeology and ethnology.

April 11 - 15 high school students from Hollene, New Mexico, were in for an afternoon guided trip.

April 13 - A. E. Borell and better half arrived for a six-day stay. Their very elegant new trailer was the envy of all eyes except mine. The reason I didn't envy them was the ceiling was so low I couldn't stand erect under it. The trailer is exceedingly well furnished and comfortable, and I see the time when our camp ground is going to have to be modified to handle trailers as well as autos.

April 14 - Norman Appleton, parasitologist in charge of the PWA Tent Caterpillar Laboratory in Santa Fe, was out for further discussion of the caterpillar problem.

April 17 - Dr. and Mrs. H. E. Hawkes, of Columbia University, were in for an afternoon. Dr. Hawkes is Dean of the undergraduate college there. He has been here two or three times before, but is always interested in each new development.

April 19 - 24 students of the Pojoaque public school were in to picnic.

Nature Notes:

Apparently the beavers have left Frijoles Canyon. There are no signs of fresh dam or timber work, and the beaver house found by Landscape Foreman A. C. Groce is abandoned and filled with silt. If there was only one beaver, it is thought he may have gone back to the Rio Grande river to bring himself back a wife. Otherwise, living possibilities here may have been found too frugal.

The garter snakes are out, several having been seen. The lizard population blossomed out almost overnight a couple of weeks ago. Horned toads are stalking through the grass.

Birds are arriving rapidly. Bird banding is now practically a dead issue, but Betty's report will mention several spring arrivals.

General:

With the report I am submitting the requested 30-day check-up on the questions visitors ask. Of course, a lot of questions were asked that the CCC boys, who were helping guide, and myself, couldn't remember, but we got down all we could. Over the 30 days 669 visitors asked 182 separate questions, and by counting repetitions of questions we get 424 questions.

A hasty estimate of percentages of questions asked on different subjects follows:

Archeology	48.5%
Park Service	16.5%
Geography	14.5%
Geology	5.5%
History	5.0%
Nature	5.0%
Personal	5.0%
Total	100%

The commonest question asked, in fact, more than twice as common as any other was: "What is the altitude here?" The next four questions, all of the same frequency, were:

"Did the Indians live in all of thos holes?"
"Do you charge for a guide?"
"How many visitors a year do you have?"
"How far up and down canyon do ruins extend?"

Archaeology Notes:

A half mile up canyon from the Ceremonial Cave, on the same side of the stream, Betty's father discovered an hitherto unmentioned cluster of cave rooms. These rooms were eight or ten in number, and some were quite well preserved. They are located atop a very high talus slope, requiring a considerable climb to reach them. One room has the original front masonry wall almost entirely intact, and shows the sockets for the lintels. This is the best preserved front section we have found in Frijoles Canyon.

Field Trips:

On April 20 Betty and I accompanied her folks on a four day trip, to see some of the monuments I had never seen.

We motored to Aztec Ruins the first day, via Bernallilo and Cubà. Ranger Hart started us through the ruins, and presently Johnwill joined us, and together they really made it an exceedingly interesting and instructive visit. Those fellows are really on their toes.

Johnwill demonstrated his silent support of Darwin by a graceful trapeze act through one of their trick doorways, and then we went to the Museum Building and saw the model museum. I like it, but agree with Johnwill that it could be improved. I don't believe the new tree-ring explanation case is as easy to understand as the old chart he was using.

Next day we drove down to Chaco Canyon, almost got stuck in the sand on the north mesa, and met Carrol Miller as he was leaving for improtant business in Aztec. After a 30-minute chat with him we went on to headquarters, met the Missus, who also welcomed us cordially, and had lunch.

Mr. McKinney guided us through the ruins of Chettro Kettl, through Bonito, the museum, and across the Wash to the ruins of Rinconada. Although he protested that he knew very little about the ruins, he disproved the contention by rendering a very capable and interesting interpretation of the ruins.

From Chaco to Gallup the roads are as bad as they were nine years ago.

From Gallup we went southward to Zuni, then across to El Morro. Mr. Vogt was away, so we visited the monument unattended. The roads were bad, but the monument was quite worth while. We enjoyed the climb to the mesa top, the view, and the Indian ruins far more than we did the inscriptions. That is a marvelous ruin, and the abundance of pot sherds indicates quite a long occupation. It's too bad an archeologist can't stick his shovel in it.

From El Morro 40 miles over the Continental Divide to Grants is the worst road it has ever been my privilege to gaze upon. I wouldn't send the meanest man in the world over that stretch. Part of the time you can make 12 miles an hour over it. We saw the road when it was practically dry, too.

En route back to Bandelier we visited Acoma, Laguna, and the Laguna Church. A custodian couldn't have had a better educational trip.

****

BANDELIER FORESTRY

By James Fulton, Forester

On April 2 I returned from Chiricahua, having started a planting proj ect which promised to proceed satisfactorily without my continued presence

Most of this month my time was spent at most any odd job. For the past two weeks, I have been doing painting in Quarters No. 1. In a few days the Forest Service will permit me to begin cutting timber for Quarters No. 2.

About April 29, beetles began attacking the landscape-planted trees. The extent of their damage has not been determined at this time. Next month I expect to carry out a control project and I will submit a complete report at that time.

****

HEADQUARTERS STUFF

BRANCH OF EDUCATION

April was a hectic month for the Educational Staff, with its three members scattered far and wide over the west.

Park Naturalist Rose was occupied with office routine matters until April 14, when he left on an official business trip to Rocky Mountain National Park, remaining there the rest of the month. Mr. Rose's report of his month's activities will be included in the May report.

Junior Naturalist Caywood was stationed at Tumacacori National

Monument on relief duty. While there he made considerable progress on the museum layout plan for that monument.

Junior Naturalist King left Headquarters April 5 for a trip through several northern monuments and then to the Field Division of Education Offices in Berkeley, California. He returned to Headquarters April 24.

Report of Junior Naturalist Dale S. King

The period from March 25 to April 5 was mainly occupied with preparing the March Monthly Report.

L left Headquarters April 5 for Bandelier National Monument, making inspections of Tonto, Montezuma Castle, Aztec Ruins, and Bandelier. Walnut Canyon was also visited. Botany blotters were delivered to the mentioned monuments, and a large museum storage case was taken to Bandelier.

April 10 I left Santa Fe for Berkeley where eight days were spent in consultation with the Field Division of Education staff concerning museum problems in Southwestern Monuments.

In addition to much detail, the following are some of the problems which received attention:

1. Selection of deep wall cases to be tried experimentally in the Bandelier museum.

2. Determination upon a standard color scheme to be used in maps and charts in Bandelier museum.

3. Division of Bandelier exhibit projects to be worked upon by (a) Berkeley Laboratory (b) Custodian Jackson and Southwestern staff.

4. Final planning of two Bandelier cases and consultation with preparators and technicians.

5. Preparation of complete Bandelier layout plan for approval of Director and Educational Division.

6. Re-submission of several temporary Aztec museum exhibits to Berkeley for preparation of final exhibits.

7. Collection of several finished Aztec exhibits to be displayed at the Monument before the travel season starts.

8. Selection of one definite exhibit for Tumacacori on which to start work immediately. Same for Montezuma Castle.

9. Discussion of cases and layouts for Casa Grande and enlarged Aztec museums.

10. Discussion of museum building plans for Casa Grande, Tumacacori, Montezuma Castle, Bandelier, and Aztec.

11. Discussion with Branch of Plans and Design concerning case, heating, and lighting plans for Bandelier.

I visited Wupatki National Monument the morning of April 24 and arrived at Headquarters that night.

Report of Junior Park Naturalist Louis R. Caywood:

The month was spent at Tumacacori National Monument on relief duty. Considerable time was spent on preliminary plans for the Proposed Museum Exhibits Plan for this monument. The remainder of the time was spent in giving guide service. For further details see the report for Tumacacori National Monument.

**

ENGINEERING

By John H. Diehl, Park Engineer

A. E. Clark, transitman, and C. E. Schmidt, rodman, with the assistance of CCC enrollees, have been busy the entire month on topography mapping at Chiricahua National Monument.

J. H. Tovrea, chief engineering aide, at the Coolidge headquarters office, has attended to general office matters and preparation of maps and plans.

Duties at Carlsbad Caverns National Park and in the field kept me away from Coolidge headquarters the entire month except for three days, April 15 to 18. During the time at Coolidge the Roads and Trails Six-Year Program was studied and outlined. A total amount of $2,816,000 was estimated for this program, including $61,750 for preliminary surveys. Priority of surveys over project construction is not only logical, but I believe this is the first time that a Park Superintendent has definitely gone on record to that effect.

On April 3, with Chief Engineer Kittredge, White Sands National Monument was visited and engineering problems discussed.

Two other visits during the month were made to White Sands in connection with the construction project being carried on by the Resettlement Administration.

April 8, Bandelier National Monument was visited and 7th period projects discussed with Project Superintendent Chase of the CCC camp.

His enrollment at this time below 100 was retarding progress on the various projects underway.

Three trips were made to Gran Quivira National Monument, where Foreman Gipe met with difficulty installing pipe in the well, owing to the bore at the time of drilling having gone off at an angle. This angle throws an additional strain on the pump, and friction on the sucker rods will cause future maintenance troubles. At present a pumping period of 1½ hours exhausts the water supply, but it is expected that time will increase the flow and relieve this condition.

**

WILDLIFE DIVISION

(Extracts from a report of A. E. Borell, regional wildlife technician)

White Sands National Monument

(1) Weather: Heavy wind and dust storms.

(2) Scientific studies: Continued observations on birds and mammals. Migrants were first observed as follows: Spoonbills, March 15; Bufflehead, March 21; Sandpiper (Least?), March 21; Black-necked Stilt, March 21. A total of 43 species of birds were recorded. Two of these, Bufflehead and Sandpiper, Least?, were new to my previous records. This makes a total of 73. Five specimens of birds and mammals were prepared as study skins. All of these were new to the monument collection, and one, Sandpiper, was new to the monument list.

(3) ECW Supervision: Went over levee and road work several times. All work was progressing rapidly and satisfactorily.

Considerable time was spent on office work.

CHiricahua National Monument

(1) Weather: Cold, cloudy, windy.

(2) Scientific studies: Recorded 26 species of birds. Two of these, Painted Redstart and Black Phoebe, were new to the monument list. Prepared two study skins.

(3) ECW supervision: With Project Superintendent Wm. Stevenson went over all of the trails on which crews are working. The trail work deserves commendation. The trails are being kept to a minimum width, and great care has been taken to avoid

damage to vegetation and rock formations during blasting. Rock supporting walls have been carefully laid so as to give a natural appearance.

Planting of trees and shrubs in the camp ground area is now being started. I am afraid that it is so late in the spring that there will be a comparatively heavy loss among transplanted trees and shrubs.

Saguaro National Monument.

(1) Weather: Mild and sunny.

(2) Scientific studies: Ten species of birds were recorded. One thrasher nest (probably Palmer's), with four half grown young was located in a cholla.

In Phoenix, I discussed mountain lion control at Saguaro National Monument with B. E. Foster, District Agent, and H. P. Williams, Assistant District Agent, U. S. Biological Survey. These men provided the following data:

1. There are five Biological Survey lion hunters in the State of Arizona.

2. They take about 140 lions each year.

3. Lions are not numerous in the Rincon Mountains, in which Saguaro National Monument lies.

4. Not over eight lions have been taken out of the Rincon Mountains during the past three years although several hunting parties have hunted the area. There are three private lion hunters who hunt occasionally in the Rincon Mountains.

5. One lioness, containing three embroyes, was taken from the Rincon Mountains on January 14, 1936, by Frank Colcord (U.S.B.S. hunter), but he was unable to take any others during the next ten days of hunting.

Mr. Foster said he does not have enough hunters to satisfactorily cover the state, and assured me that he would be quite willing to keep his hunters out of the monument if the Park Service requested him to do so. He further stated, that if in the future, due to pressure by cattlemen, the Park Service wanted lion control, he would try to send one of his hunters if the Park Service requested him to do so.

(3) ECW supervision: Most of the Crew is working on road repair and old road obliteration. All work is being done carefully, and I saw no damage to cactic or other vegetation.

WILDLIFE DIVISION (CONT.)

CASA GRANDE NATIONAL MONUMENT

(1) Weather: Warm and sunny.

(2) Scientific studies: Recorded twenty-three species of birds. One of these, Brewer Sparrow, was a new record for the monument. Put up three study skins (Verdin, Vesper Sparrow, Brewer Sparrow) which were new to the monument collection.

(3) ECW supervision: With Superintendent Pinkley and Park Naturalist Rose went over ECW, museum, and wildlife programs for White Sands, Chiricahua, Saguaro, Chaco Canyon, and Bandelier National Monuments.

****

CLOSING

Well, Chief, the record would seem to indicate that we did manage to keep busy last month and I think every one of our men will agree that the record is right.

You will notice that we have had quite a shifting of men this past month. Mr. W. H. Smith, of Gran Quivira National Monument, retires because of ill health. Mr. Boundey goes from Tumacacori to Gran Quivira where, being more or less used to pioneering conditions, he settles down to carry on the good work Mr. Smith has so well started.

Mr. Caywood transfers from headquarters to Tumacacori where he can stay in one place for awhile instead of flitting hither and yon as he has been doing this past year or so and also where Winnie's health seems to be much better.

Charlie Steen shifts across the porch at Casa Grande from Ranger, Casa Grande National Monument to Junior Park Naturalist, Southwestern Monuments, and thus becomes the shuttle which, flying back and forth, will strengthen the web of our organization during the coming year

Don Irskine comes down from the northern part of Arizona where he has been pinch hitting at Walnut Canyon, and becomes ranger at Casa Grande just as we break into the so-called dull season and the hot weather.

Luis Gastellum will be our ECW Clerk, vice Robert Cole, resigned. This isn't such a big change for Luis as he will remain right here in the office, which is good news to the local volley ball players who play out on the residential parking area each Tuesday and Thursday night

Paul Beaubien is spemding a day or two at headquarters as this is written and then goes up to take over Walnut Canyon for the summer

All of us, and I am sure this includes yourself, Chief, join in wishing Mr. W. H. Smith a speedy return to good health. We understand that he is going back for a visit at the old home in Arkansas this summer to rest and renew old friendships. He is the first man we have had go under the Retirement Act and we are again impressed with the wisdom and justice of that act. We have had no more faithful and enthusiastic worker in the last fifteen years than Mr. Smith and it is comforting to

know that he will continue to receive a pay check which will do much toward warding off financial worries. We of course will still consider him as one of our men to be carried on our mailing lists, to whom we can go for advice as to future development at Gran Quivira, and who will, we feel sure, always maintain his deep interest in our work.

I think you will agree with me that the reports this month are good and the men are keeping up a sustained interest in their work. That these reports of our men seem to carry a wide interest is evidenced by the following letter which turned up in the mail yesterday:

> "We have in our files some copies of Southwestern Monuments Monthly Report, beginning with February, 1935. Is this publication available for free distribution? If so we shall be very grateful to have our name placed on your mailing list to receive it regularly. If they are in print may we have the back numbers necessary to complete our file? They are January, April, June, September and November, 1935 and on to date. Our reference department will be able to make valuable use of this material."

That was from one of the largest County Public Libraries on the Pacific Coast.

And here's one from another division of our own Service:

> "If it is possible I would like to get current copies of your monthly narrative reports, and whatever back numbers are obtainable.
> "On a recent visit to Wind Cave National Park I discovered the November issue attached to the other narrative reports of the parks and monuments. There is a wealth of ideas and information contained therein which I am sure would be of immense practical value here at ----------."

If we weren't so modest, Chief, we would feel all puffed up by letters like these!

Cordially,

Frank Pinkley

Superintendent.

THE Supplement



SUNSET CRATER GEOLOGICAL REPORT

By Vincent W. Vandiver, Regional Geologist

INTRODUCTION

The almost perfectly preserved crater of an extinct volcano, known as Sunset Crater, was established as a National Monument on May 26, 1930. The name is derived from the various shades of red color of the cinders in the upper portion of the cone which gives the appearance of being illuminated by the setting sun. To the Hopi Indians Sunset Crater was called "Kana-asKatchinki" which refers to the house of Kana-asKachinas, a group of friendly spirits who are supposed to dwell in the crater. The reserve area of the monument contains much of interest besides the remarkable crater and includes very recent lava flows, fissures or vents, contacts of the different flows, and ice caves. The reserve covers 3,040 acres and is located some ten miles east of the summit of San Francisco Mountain. The distance from Flagstaff is seventeen miles. It lies approximately ten miles north of U. S. Highway 66 and is therefore most accessible to a main route of transcontinental tourist travel.

NATURE OF REPORT

H. H. Robinson has given an admirable geological report on the "San Franciscan Volcanic Field of Arizona" in the United States Geological Survey Professional Paper No. 76. Since the facts covering this area, of which Sunset Crater is a part, are presented in such detailed manner in this report that there seems no need for duplication as regards to minute description of the geology. It is not considered possible at any rate to make meritous contribution to such a treatise without months or even years of field work.

It will therefore be my endeavor on the following pages to outline briefly the geological history of the area of Sunset Crater and vicinity; to indicate certain important features connected with this history, which should be brought to the attention of the visitors, by signs along the roads or trails or in a wayside shrine, in order that they will carry away a more complete and vivid picture; and to point out my observations which you may care to consider in any development of the monument, which in my opinion will best portray the geological phenomena of the area. It is also hoped that this resume will be useful to the Rangers assigned to this monument.

PHYSIOGRAPHY

The volcanic field of the San Francisco Mountains occupies a large part of the southern portion of the Colorado plateau region, wherein is located so many of the natural wonders now included in the National Park chain. This field has an area of some 3,000 square miles. Within the large plateau area are lesser plateaus, outlined by canyons trending generally north and south (with the exception of the Grand Canyon of

the Colorado), fault scarps with the same general trend, and erosion escarpments trending mainly east and west. Strictly speaking there are no mountains in the plateau region with the exception of the volcanic masses of Mount Trumbull and the San Francisco Mountains.

The most conspicuous landmark of the San Francisco Mountains is the San Francisco Peak, which attains an elevation of 12,611 feet above sea level, rising approximately 5,000 feet above the surrounding plain. This mountain is surrounded by several other large peaks ranging in elevation from 8,500 to 10,500 feet above sea level. The general area of the volcanic field is studded with cinder cones, but since few of them are more than 700 feet in height, they appear insignificant as one drives among them. They are indeed more impressive when viewed from the tops of some of the larger peaks or if studies on the U. S. G. S. topographic map of the Flagstaff quadrangle. Sunset Crater is one of the more prominent of these cinder cones, having an elevation of 8,000 feet above sea level, and rising some 1,000 feet above the level of the adjacent country.

The drainage for the volcanic area finds its way in due course to the Colorado River. The water courses or washes are comparatively few in number and they naturally radiate from the higher portions of the field. Oak Creek is the only perennial stream existing in the region and it is fed by several large springs which come to the surface at the intersection of two fault planes at the head of the canyon. The climate of the plateau country as a whole ranges according to altitude from semi-tropical to temperate.

Robinson (1) mentions some special characteristics of the lava flows which have caused numerous minor changes in the drainage system of the area. He states that the damming of the water courses has given rise to small lakes, some of which still persist, while others have been drained by the cutting down of the obstruction that formed them, although not before they had been more or less filled with sediment. The grass covered glades, which are a picturesque feature of the landscape throughout the pine forest, generally indicates the location of former lake sites. Two typical examples of drainage modification by lava flows may be observed on the Little Colorado River at Black Falls and Grand Falls. It may be worth while to consider side trips to these two points for people visiting Sunset and Wupatki National Monuments. At least some interesting models could be made of these features for a wayside shrine which would depict the encroachment of lava on the stream and the changes resultant therefrom.

GEOLOGIC HISTORY

The Paleozoic Era of the plateau is admirably represented in the section which is exposed at the Grand Canyon of the Colorado. Various types of sedimentation are represented in this section, extending from

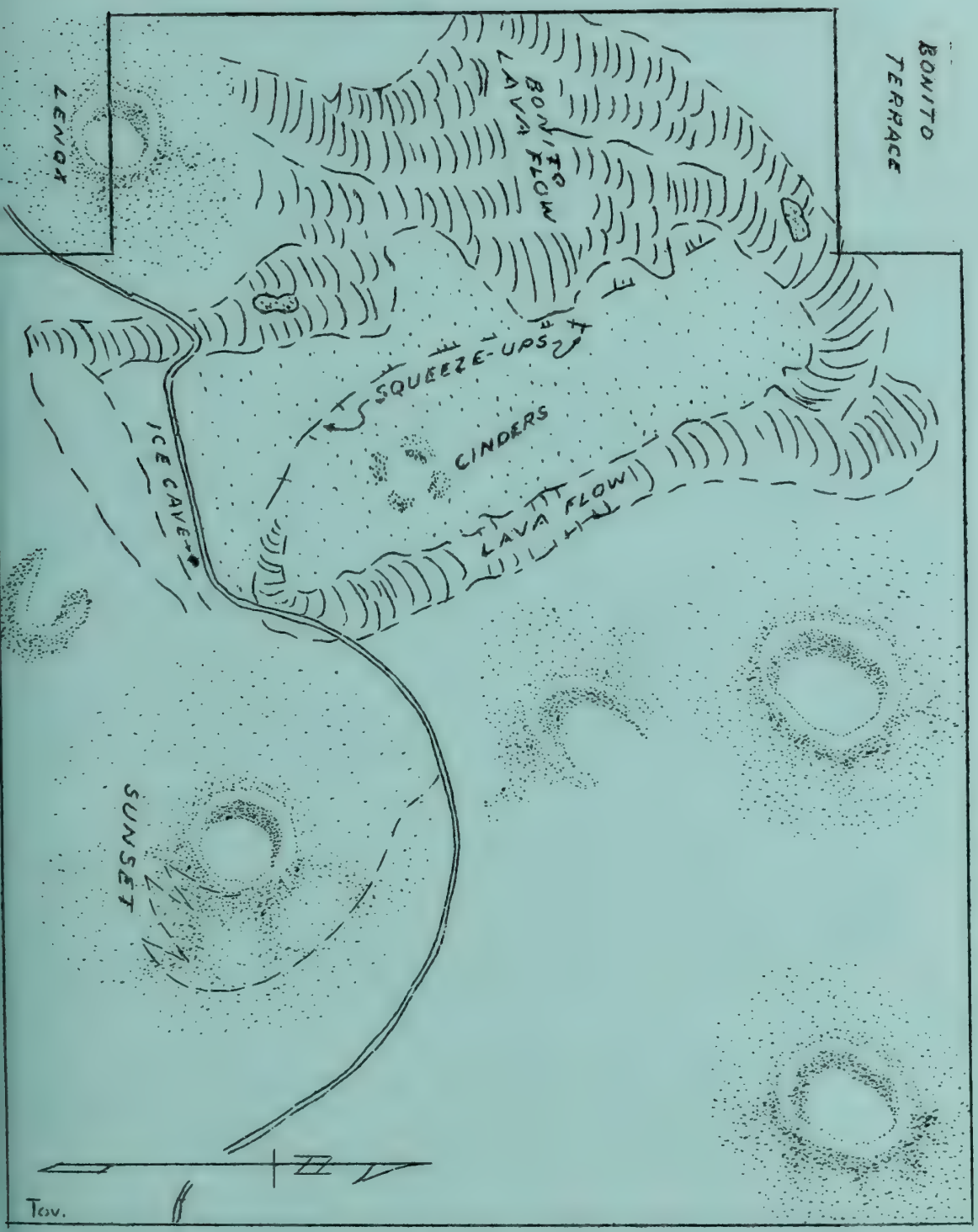


PLATE NO. 1
SUNSET CRATER NAT. MON.



the Tonto platform to the rim of the canyon. Deposits of marine sediments are present which contain shells and corals; beach and flood plain deposits are represented by formations bearing sea weeds and the remains of crab-like animals; also formations of continental origin, such as great thicknesses of dune sands, containing tracks of primitive reptiles or amphibians. Thus during this era there is evidence of repeated fluctuations in the land surface with the resultant encroachment and withdrawal of the seas. At the close of the era the seas had invaded most of northern Arizona as indicated by the widespread distribution of the Kaibab limestone formation and the abundant fossil record of marine life which it includes. This formation forms the rim rock at the Grand Canyon and may be observed in most any direction near Sunset Crater.

The Paleozoic is followed by the Mesozoic Era and from a study of the formations included during this interval it is evident that there were also fluctuations of the sea during this time but in the main the lands were generally depressed. Great thicknesses of sandstones, shales and limestones were deposited on top of the Kaibab formation. At the close of the Mesozoic (Age of Reptiles) the waters retreated and the era of recent life of the Cenozoic followed.

The surface of the earth is rarely stable and constant adjustments are being made even at the present time. When strains or stresses are too great during these crustal movements, faulting and fissuring takes place, and oftentimes quantities of molten lava is poured out on the earths surface through these vents or lines of weakness. Adjustments on a huge scale were in vogue at the close of the Mesozoic when the great Rocky Mountain construction took place.

During the Miocene period of the Cenezoic the area west of the Little Colorado River was rising to form what is known as the Little Colorado Monocline. This may have been due to an intrusion of molten lava which did not reach the surface which is termed as a laccolith. Following this general uplift erosion proceeded at a much more active rate and the Mesozoic formations of the San Francisco Mountains was almost entirely eroded away. In fact parts of the Permian formations of the Paleozoic were stripped.

During the Pliocene period (late Cenozoic) we have the First Volcanic Period of the San Francisco Mountain area. Huge fissures gave vents for the pouring out of sheets of basaltic lava, from 50 to 300 feet in thickness, covering a wide area and extending from the Tonto Rim to Cedar Wash. Following in the latter part of this period the uplifting continued when great north-south faults cut the earth's crust and the Second Volcanic Period began. As tremendous quantities of lava was poured forth on the surface, such prominent peaks as Bill Williams Mountain, Kendrick Peak, Sitgreaves Peak, the San Francisco Peaks, and O'Leary Peak (near Sunset Crater) as well as others were formed. A variety of different types of lava was extruded at this time

but in general they were more acid, contained more quartz, and were therefore lighter in color than the basalt of the First Volcanic Period.

As the plateau continued to rise the erosive agencies became more severe and great canyons were carved on the surface. Several thousands of feet of volcanic rocks were no doubt removed from the crests of the San Francisco Peaks as is indicated by a projected profile of their surface. With physiographic features of the plateau much as it is today the Third Volcanic Period began. To the Third and last general period of volcanic activity in this field, covering a considerable interval of time (beginning near the close of the Second Period and extending into comparatively recent geologic time), some 200 basalt cones and lava flows over 1,200 square miles represent the volcanic activity during this period. Sunset Crater is one of the cones formed at this time. This activity certainly occurred during the quaternary period and presumably during the latter part of this period according to Robinson (1). The state of preservation of the cones and lava flows is so perfect that they may date from historic time. Due to their presence, however, in an arid to semiarid region they naturally retain a much fresher appearance than would otherwise be the case in a humid climate.

Generally speaking throughout the geologic history of the plateau there have been two opposing forces which have produced the detailed topography - erosion, which is destructive; and volcanism, which is constructive.

One question that will probably be asked many times, due to the recent character of the surface evidence of volcanic activity, and that is has the activity actually ceased in this region. Robinson (1) advises as follows on this subject: Broadly speaking it may be said to have ceased. There may be further small outbreaks of basalt, but this does not seem probable in view of the insignificant volume of the latest eruptions compared with the total volume of lava of the last general period of eruption. These very latest outbreaks may be looked upon as representing the final feeble manifestations of a long and very complete cycle of volcanism.

SUNSET CRATER

Sunset Crater is the most dominant feature of the monument. It rises to a height of about 1,000 feet from its base, and its summit has an unbreached crater about one-fourth mile in diameter and 400 feet deep. The upper portion of the cone is covered with tinted cinders and lapilli (little stones). The mountain has received its name from the rainbow effect, where the color of the cinders grades downward from the summit of the cone through the various shades of yellow, orange and red into the black material of the lower slopes. There is practically no evidence that the cone has been shattered by explosions and the fact

that erosion has not produced any noticeable change of form attests somewhat as to its recent age.

Basaltic lava is exposed around the rim of the crater. It has been altered and bleached to tones of yellow and pink by fumarole action. Hot spring minerals may be found in this zone. Sulphur crystals, gypsum and limonite are present. Fragments of sandstone and limestone which have been ejected from the crater are found around the rim. Some of the specimens of sandstone have their stratification preserved in part but the edges have in most cases been well altered due to the action of heat. Most of the limestone has likewise been metamorphosed so that it is now classed as marble.

The eastern rim of Sunset Crater is 150 feet or more higher than th the western rim. This characteristic is common among the two hundred cinder cones of the last period of activity. The fact is explained by the reason of the prevailing westerly winds during the main eruption when ash, cinders and lapilli fell in this direction and thereby building up the eastern rim to greater heights.

Because of the various indications of recent activity at Sunset Crater and vicinity, which are more or less visible to the visiting public, the determination of the age of the last eruption has always been an interesting question. Robinson (1) states that the latest cones and flows are older than the pine trees growing at the edge of Bonito lava flow, west of Sunset Peak, which would make them not less than 300 years old and possibly not more than 1,000 years old. A possible Hopi tradition of the eruption of Sunset Crater is mentioned by Dr. Colton (4). Geologists, who are generally credited with being unable to think in terms of a few years, have been content to call it a very recent cone. Exact determinations in this regard have required other means of approach. The ash from this crater undoubtedly covered hundreds of square miles. It is known that this black sand buried numerous pit houses of an ancient people (pueblo) which had been constructed on Bonito Terrace. A number of these houses have been excavated by archeological expeditions of the Museum of Northern Arizona, McGregor (5). Attempts were made to collect additional data from the sites that had been abandoned before, or at the time of the eruption of Sunset Crater. Charred beam material was particularly desirable, as well as information collected as to the nature of the ash fall accumulated above and in the sites, with data as to the pottery in use, artifacts, and types of houses contributing factors.

A trail leads to the summit of the crater and the round trip can be made in one hour if one is rushed for time. It is best however to spend at least a half day on the rim and in the event that the interesting details of the mouth of the crater fails to hold one, there is the magnificent panorama of the Painted Desert, San Francisco peaks, and the Bonito Lava flow below with its many interesting features.

BONITO LAVA FLOW

This lava flow is probably the second most important feature of the monument and is almost entirely contained within the boundaries. The map, Plate 1, which accompanies this report shows the relationship of the lava flow with Sunset Crater. This lava escaped from a vent opened through an older flow of the Third Period and spread out quietly into an intercone basin. As the lava could not flow far it has probably piled up to depths of several hundred feet.

A badly disrupted cone known as Yaponcha Crater is located in the central portion of the flow. The exact nature of this cone is not known. It is possible that it has been the source of some of the lava and that it was disrupted at the time of the flow. Another explanation is that it may have been more or less floated on the lava and thereby disintegrated.

Along the surface of the Bonito flow to the west of the above-mentioned cone and extending in a northwest direction is a large vent or fissure which has also been termed "Anosma" or "squeeze-up." After the surface of the flow had solidified, the fissure tore the surface, and semi-plastic lava was squeezed upward. In places the lava has been forced some ten feet in the air and frequently crumpled under their own weight. This type of flow seems to be rather unique among volcanic phenomena and it has been suggested that there may be some relation to the fact that the main lava flow was dammed.

The Ice Caves immediately west of Sunset Crater on the Bonito flow seems to be the principal attraction to a great many people. In fact at the time of my last visit some people were asking how they could get to the Ice Caves and seemed little concerned or anxious to ask questions regarding the multitude of volcanic phenomena about them. The cave has only been explored a few hundred feet. It is likely that the roof has collapsed in places and it may well be rather extensive. This type of cave is typical of lava flows where the lava has drained away, leaving the solidified roof standing. It is most unusual to enter the cave in summer and find it filled with ice. The details as to the method of the formation of ice caves is not fully understood. Lava is a poor conductor of heat and the cold air which settles to the bottom portions of the cave is protected to a certain extent. It is possible that some interesting information could be collected which might have a bearing on this feature if temperature readings were taken at regular intervals in the cave.

Besides the above-mentioned important points in connection with the Bonito flow there are several others worthy of attention. There are a number of fumaroles at the base of Sunset Crater and vicinity where gases escaped during the last active stage of the crater. A sink hole is shown on the map just east of the Yaponacha crater. In this case the lava flowed out from under the crust forming the sink.

The remains of a hot spring is also shown on the map. It is located very near the large fissure of "squeeze-up" previously discussed. A considerable portion of the Bonito flow is covered by a more recent ash fall. Examples are numerous illustrating this feature and it has been noted that considerable more ash fell on the southern than on the northern end of the flow. Cooling cracks, contacts of the different flows and other fascinating features are prevalent and it is considered that as the monument is developed many other interesting facts will be divulged of interest and importance.

ARCHEOLOGICAL

The Hopi legends of the Sunset Crater region have been described by the staff of the Museum of Northern Arizona. The Museum Notes (4) give a vivid picture of Yaponcha, the Wind God and the Kana-a Kachinas of Sunset Crater. We have endeavored to show how determination of the age of the last eruption of the crater has been made by a study of the remains of pit houses. This type of material when authenticated will form a most important background for a story of the monument.

FUTURE DEVELOPMENT

I do not know if detailed plans have been formulated as to the development of this monument. It seems to me that one custodian could probably take care of Sunset and Wupatki as is now the case. It is my thought that a Wayside Shrine near Sunset could portray all the facts of the monument and that directions from this point could be given to the various trails to illustrate the features in place. Exhibited in the shrine we could arrange generalized sections and inexpensive models to show the different stages of volcanic activity in this field. A collection of the various types of lava, hot spring minerals, rocks and material from the outcrops of sedimentary formations in the surrounding area and corresponding material which has been ejected from the crater would all no doubt prove of considerable interest. I believe that panorama photographs could be taken in this general area and that ink sketches could be made therefrom to serve as a guide to the various trails. Actual trail construction should be kept down to a minimum and it is thought that with the proper use of signs the visitor will be directed sufficiently to see all of the points of interest. It is possible that some sort of a guide to prominent features of the landscape will prove essential from the summit of the crater. Some of these things will of course not be necessary if a permanent ranger is maintained for this monument.

POINTS OF INTEREST

It is considered that the following features of the monument will be worth while calling to the attention of the public when it is developed:

1. Sunset Crater - Signs is what seems to be needed most at the present time especially in view of the fact that there is no permanent ranger present and there is no pamphlet available.

2. Bonito Lava Flow should have markers at different points to better depict the facts for the visitor.

3. Attention should be called to the most important fissures or "squeeze-ups" with signs.

4. An explanation of what we know of the formation of ice caves might well be posted at the entrance of the caves.

5. Fumaroles, sink holes, spatter cones, hot spring remains, contacts of different flows of lava should all be marked by directions from the main road or "turn-around." A sign could very well be erected at each feature explaining briefly its origin.

I am aware that some people object to too many signs but I see no recourse under the present setup of the monument. I am sure that many people go there and see the ice cave and go away with very little knowledge of what has gone on about them. The monument is most accessible to a main artery of travel and many more people will visit the area if a little money is spent on the development. It seems to that there is every justification for some development as Sunset Crater is really one of the most important monuments in the Southwest.

REFERENCES

1. Robinson, H. H., The San Francisean Volcanic Field, Arizona; Professional Paper No. 76 of the United States Geological Survey, 1913.

2. Colton, H. S., Sunset Crater and the Lava Beds; Notes of the Museum of Northern Arizona, Volume 2, Number 4, October, 1929.

3. Colton, H. S., San Francisco Peaks; Notes of the Museum of Northern Arizona, Volume 3, Number 3, September, 1930.

4. Colton, H. S., Colton, Mary-Russell F., and Nequatewa, Edmund, Hopi Legends of the Sunset Crater Region; Notes of the Museum of Northern Arizona, Volume 5, Number 4, October, 1932.

5. McGregor, J. C., Additional Houses Beneath the Ash From Sunset Crater, Museum Archeological Expedition of 1935; Notes of the Museum of Northern Arizona, Volume 8, Number 5, November, 1935.

6. Colton, H. S. and Baxter, F.C., Days in the Painted Desert and the San Francisco Mountains. A guide Book. Privately printed in 1932.

7. Darton, N.H., A Resume of the Geology of Northern Arizona; University of Arizona Bulletin No. 119, Geological Series No. 3, Tucson - 1925.

SOME EARLY HISTORY OF PIPE SPRING NATIONAL MONUMENT

By Leonard Heaton

Our records indicate that the first white men came to Pipe Spring in 1856. This party was send out by President Brigham Young, of the Mormon Church, to explore and report on the country lying in and around the Colorado River and, if possible, make a treaty of peace with the Navajo Indians living on the south side of the River.

Jacob Hamblin was captain of the party and among the members were William Hamblin, sometimes called Gunlock Bill, one of the best rifle men in a country where expert shooters were common, Amon Tenny, and Dudley Levett. While camping at the spring, which was then without a name, some of the men played a joke on William Hamblin by telling him he could not shoot through a silk handkerchief hung at a distance of fifty steps. Hamblin accepted the challenge and failed to puncture the silk cloth, not because he could not hit it but because the silk, hung by the upper edge only, yielded before the bullet and remained unpunctured. Hamblin, somewhat vexed by the joke, turned to Amon Tenney and dared him to put his pipe on a rock near the spring, which was at some distance, so the mouth of the bowl faced directly toward the party, hamblin wagering that he could shoot the bottom out of the bowl without touching the rim. Tenney accepted the wager, laid the pipe on the rock as described and Gunlock Bill promptly and neatly shot the bottom out without touching the rim. Whence the party named the spring Pipe Spring and the name remains to this day.

The first settlement at Pipe Spring was in 1863 when Dr. James M. Whitmore and his brother-in-law, Robert McIntyre, established a cattle ranch and made some improvements. They built a dugout of earth and cedar logs, locating it about 50 or 75 feet east of the southeast corner of the present fort.

In the winter of 1865-66 the Navajo Indians were giving some trouble to the white settlers in Southern Utah and Northern Arizona and on Jan. 8, 1866, some Indians stole the cattle and sheep that Whitmore had in the pasture near the spring. The two white men discovered their loss at once and followed the trail to the southwest. At a point about four miles away they were attacked and killed by the Indians and all the clothing was taken from their bodies.

That night the Indians came back and raided the place but did not go into the dug-out where Whitmore's eight-year old boy was in hiding. The boy heard the Indians and, since his father and uncle had not returned as they had promised, decided that they had been killed. It was a night of terror for him and the next morning he started, on foot and alone, for St. George, 96 miles away, to report the killing. By noon he had reached a point ten miles from the Pipe Spring, when he met some

men who, upon hearing the news, sent the word on to St. George.

Some of the state militia, under the charge of Captain James Andrews was sent out to get the bodies of the two men and to bring the Indians to justice.

After hunting for several days in two feet of snow, the bodies were found. Also six Indians were caught who had on the clothing of the murdered men. These Indians would not talk except to say that they did not kill the white men. Thinking the Indians were lying, the militia men killed them and left them lying in the snow.

Years later, when the truth came out, it was learned that the real killers were the Navajos and a few piutes, who then traded the clothing of the victims to some more peaceable Piutes, who told the truth when they denied killing the white men but lost their lives on the evidence of the clothing which they wore. A son and brother of two of the Indians who were killed, whose name is Captain George, lives a couple of miles north of Pipe Spring.

In the settlement of the Whitmore estate the Springs and the surrounding lands were purchased by the Mormon Church. Bishop Anson P. Winson was sent out in 1868 with instructions to build a fort, improve the place and take care of the tithing cattle for the Church. Winsor's first task was to erect some temporary buildings in which to live while constructing the larger edifice. He constructed these two buildings of rock walls and juniper roofs at some distance to the northeast of the spring. This building faces east, has two rooms with a shed between. Each room has a fireplace, two windows and a door. This structure was a mass of ruins and was restored in 1925.

The second house built by Winsor is to the west of the spring and faces south. It is a two-room house with a double fireplace in the partition between the rooms. Each room is entered by a door and the west room has two windows, the east room, three. This building was restored in 1929.

Work was begun on the fort in the fall of 1869, a crew of forty men working that winter and spring. The fort is made of native red sandstone taken from the hill behind and to the west. The fort consists of two two-story buildings facing each other across a courtyard. The courtyard is closed at the ends with heavy gates. The north building was erected directly over the spring, the water flowing through the south building so the inhabitants were assured of a plentiful supply of fine water at all times.

These two buildings are gradually being restored as funds permit to their condition when built and it is hoped that before many years the fort will be furnished with the pioneer furniture of that period.

In the winter of 1871 the Deseret Telegraph Company's line reached Pipe Spring and was put into operation in December of that year. The room used for the office was in the west end of the second floor of the south building. The office was opened by Superintendent Amos Milton Musser of the Deseret Telegraph Company, who sent the following message to the Deseret News: "The office at Pipe Spring is now open with Miss Luella Stewart as operator." This lady remained for only three or four months as Bishop Winsor did not think that an operator was needed since the Indians were giving no trouble at that time. Miss Stewart was transferred to Kanab, Utah, where she was operator for several years and in that capacity sent Major Powell's messages for him when he was exploring the surrounding country.

Bishop Winsor left the Springs about 1875 and the place was later sold to private interests for a cattle ranch. It has always been a point where thousands of cattle were bought and sold each year and where herds were prepared for shipment and drives were started for the railroad.

By proclamation of President Warren G. Harding, May 31, 1923, this place became known as Pipe Spring National Monument to be administered by the National Park Service under the Department of the Interior. Here the visitor can obtain a fair idea of some of the pioneering conditions which confronted those who made the early settlements in this country and can learn something of that most interesting phase of the early Mormon settlement of Southern Utah and Northern Arizona.

*****

NOTES TAKEN IN AN INTERVIEW WITH ALONZO WINSOR

BY LEONARD HEATON, March, 1936

These are some of the incidents that happened in the life of Alonzo Winsor at Pipe Spring National Monument from 1868 to about 1876. Alonzo Winsor was a son of Bishop A. P. Winsor who was sent there by the Mormon Church to erect a fort and act as foreman in handling the herds of tithing cattle which were to be sent on that range by the Mormon Church.

The Winsors went to Pipe with a pack outfit in the fall of 1868 in order to look the country over and pick out the site for a fort and locate the supply of building rock.

They made their first home in the Whitmore and McIntyre dug-out which had apparently been unoccupied since its owners were killed by the Indians in January, 1866. This dug-out is located east of the fort about 150 feet and was about 20 feet long by about 15 feet wide, facing southeast. It had a fireplace in the back and a doorway in the front. The walls were worked up about eighteen inches above the ground and were made of rock. The roof was rather flat and was constructed of

juniper poles covered with loose bark and dirt making it fairly waterproof. This roof extended out over the front of the dug-out several feet, making a porch or shed.

Mr. Winsor says that there were very few trees close to the spring at that time. Mr. Whitmore had several corrals there and had probably cut all the trees that could be used in buildings.

The disintegration of the Whitmore dug-out began when the boys were having some fun with an old cow that had been taught to fight at an early age. One day while they were teasing her the cow ran one of the boys up on the roof and tried to follow him, but she was too heavy and fell through. After that the dug-out became a trashpit until it was finally filled up.

In the spring of 1869 A. P. Winsor had 20 or 30 men sent out to him to start work on the fort. They first built two rock cabins, one on each side of the fort to be used as living quarters while the fort was under construction. These cabins were roofed over with poles, bark and dirt. The doors were home made and the windows were shipped in from Salt Lake City.

Alonzo Winsor does not remember the number of men employed but thinks it would probably have averaged 25 workers and that the construction was finished in 1870. Some of the straw bosses were: Elijah and Elisha Averett who were responsible for getting out the rock; an old Danish man was head carpenter; Joe Hopkins was the blacksmith and also worked as a carpenter; and Graham McDonald was the plasterer.

Most of the lime used for mortar came from Pocketville or Virgin City, Utah. Mr. Winsor tells that on one of his trips for lime a rain storm came up and he had to shovel out a lot of lime to keep it from breaking the wagon box. The rocks for the construction were dragged in on a stone boat from the side of the nearby hill with the aid of an old mule. The lumber was cut and hauled from the Buckskin Mountains about 45 miles east.

There was a trap door and ladder in the east room of the lower house by which men could be shifted from the ground floor to the second floor if necessary without going up two flights of steps out in the courtyard. When the ladder was not in use it was swung up against the ceiling and fastened there.

The watch tower, which was on the north house, had a pole on which a flag could be raised by getting up into the tower.

About 1870, or soon thereafter, the Mormon Church had built a small fort on the west bank of the Colorado River at Lees' Ferry where two or three men were stationed to keep the Navajos from crossing at that place.

The Indians had to swim to get across at that crossing. This fort made the Indians cross the river further north where they came out among stronger settlements and this soon caused them to give up trying to plunder the whites.

The Winsors seemed very anxious to get into the fort as they moved in as soon as the first story of the lower house was completed, having a stove in the east room and using the west room as a cellar. In the west room the water from the spring ran through and out at the southwest corner of the room.

After the fort was completed these two rooms were turned into a cheese factory. The Winsors milked on the average one hundred cows per day throughout the year, making butter and cheese which was sent to St. George, Utah, to be used by the men who were working on the Mormon Temple at that place. Mr. Winsor had besides his own sons four men to help in the milking and doing the range work among the cattle; this help would be increased considerably at roundup times.

About every two weeks small bunches of beef steers would be driven to St. George, Utah; in the spring and fall large bunches were driven to Salt Lake City to market.

Aside from the cattle industry the Winsors had another side line; that of hunting wild horses for their oils which would be sold to the tanners, and for the hair of their manes and tails which would be made into hair ropes. They would use all kinds of devices in getting the wild horses; running them down, roping them, trapping them, and shooting them. One time they caught an old mule belonging to Major Powell. To have some fun they stuffed an old pair of trousers full of grass and tied them on the back of the mule which they then turned loose among the wild horses who immediately scattered in all directions.

When A. P. Winsor left the fort he turned over to Mr. Charles Pulsipher, the new foreman, about 3,000 head of cattle. Young Alonzo Winsor remained at Pipe about a year showing Mr. Pulsipher the range and helping with the cattle.

The Winsors did not have a great deal of furniture and most of what they had was homemade. The chairs were the old-fashioned raw hide seat style; the beds had cords or rawhides ropes for springs. They also had a writing desk and a stand or two. This furniture was all taken with them when they moved to St. George in 1875.

Upon one occasion the telegraph at Pipe proved very useful. Some Navajos came out to trade their blankets for horses at Kanab. They found the men were few so they did the trading to suit themselves, taking what horses they wanted and giving in return the blankets they thought the horses were worth. They then went on to Pipe to finish

their trading. In the meantime, Mr. Winsor had received a telegram over the wire which came into the fort, telling him how the Indians were acting and to be prepared for them. He sent out for help which arrived in the night without the knowledge of the Indians who had come in the day before. The following morning it was a great surprise to the Indians to see so many armed men come out of the fort and the trading that day was all on the side of the whites.

Alonzo Winsor was under the impression that 13 Indians were killed in the episode which cost the lives of Whitmore and McIntyre. He also said his father told one of the young Indians if he told the white men where the bodies of Whitmore and McIntyre were he would not be harmed. The Indian took them out in a southeasterly direction for about four miles and there, under two feet of snow,he showed them where the bodies were, shot so full of arrows they looked like porcupines.

The young Indian mentioned above lived with the Winsors for a number of years because he said they had saved his life and he did not care to go back to his tribe. He was subject to epileptic attacks which finally caused his death as he was seized with an attack while in the hills between Moccasin and Short Creek and, falling over a cliff, was killed.

Mr. Winsor said he would like to go back to Pipe Spring once again as it had been more than 50 years since he was there. Also he said that he was very much pleased that the National Park Service had taken it over and was keeping it as a monument of the early pioneer history.

****

RECONNAISSAINCE OF TONTO

By Victor R. Stoner

Five miles east of Roosevelt Dam, Arizona, there is a group of very interesting cliff dweller ruins. Although these ruins are easily accessible, practically no systematic and scientific investigation has been made of them. Pot-hunters and tourists, however, have done inestimable damage to them.

The earliest mention of the Tonto Cliff Dwellings that I have been able to find was made by Patrick Hamilton who wrote in his "The Resources of Arizona" in 1884:

"In one of the caves on the south side of the Salt River the bones of a large animal, evidently of the mastodon species, have been found... ...In another cave, on removing the debris, pieces of cotton and cotton cloth have been discovered six feet below the present floor. These relics were in good state of preservation, the cotton being of a fine silky fiber. One of the pieces of cloth showed a rude attempt at ornamentation, having small eyelets worked by some sharp-pointed instrument.

A piege of coarse matting, doubtless made from native grasses, and in a good state of preservation, was also found.....Nearly all these remains are of stone, showing that the ancient builders used that material in preference to adobe or concrete whenever they could get it."

Cushing and Fewkes visited the Tonto Ruins, but apparently their reports were never published.

James H. McClintock wrote in his "Arizona the Youngest State" in 1916:

"Fully typical of cliff dwellings in general, and yet embracing two of the largest of the kind in the Southwest are ruins in a canyon now only a couple of miles distant from the main traveled automobile road between Phoenix and Globe and about four miles from Roosevelt---- ..The lower is the smaller, but the better preserved. Its roughly moulded walls fill a shelf-like open cave 140 feet long, forty feet in extreme depth and thirty feet in extreme height. The exterior wall, now broken, was built upon the edge of the cavern ledge, above which was once a sheer descent of about twenty feet. The building is of three floors, even now. The rooms have notably high clearance and a few years ago still in place was a rough upper flooring from which could be touched the cave roof at front and rear. Here it was, no doubt, that the primitive home guard peered over the low parapet and where the papoose in days of yore had his playground. The lowest floor is of clay hard-trodden. The upper floors had typical construction. Fixed firmly in the walls were set slender red cypress logs, rough hewn at the ends, the work of the stone or obsidian axes appearing not unlike the tooth marks of beavers. Across the logs were laid small cypress or juniper boughs; then came the ribs of the giant cactus, then river reeds and lastly a well-packed coating of adobe clay.

"The so-called red cypress is to be found in all the cliff dwellings of the Tonto Basin region, sound and firm wherever it has been kept dry. Some of the beams, peeled of bark, are about ten inches in thickness and often twenty feet long. .....It is said to be peculiar to Arizona, yet now it is to be found in only two places. One is in a grove near the Natural Bridge, sixty miles to the northward of the Roosevelt cliff dwellings, and the other, now comprising only a few trees, is in the Superstitions, about twenty miles west of the caves.

"The upper ruin has suffered within very modern times by fire. Within both were found pottery by the wagon load, with a number of stone implement sand half a dozen corn mortars (metates). The pottery closely resembles in marking that of the valleys of the Salt and Gila with the same terrace designs, jagged lightning flashes and twice-broken lifelines (signifying nourishment). .....In the valley below are the remains of houses and of irrigation ditches one of which had been dug through hard limestone with remarkable precision and which is assumed

to have crossed the Sally May Creek by some form of high and long aqueduct. A latter-day ditch follows the same lines but at a lower elevation, for the river bed is not where it was in prehistoric days."

These cliff dwellings were created a National Monument in 1909 by President Theodore Roosevelt. No care was taken of them, however, and they were rapdily disintegrating under the vandal hands of tourists and pot-hunters. In order to preserve them as a point of interest for its Apache Trail visitors, the Southern Pacific Company secured permission to erect a high fence across the entrances of the caves. Later the company employed an Apache to act as custodian of them. In recent years, the National Park Service has placed a resident custodian at the Monument.

During the Christmas holidays of 1920, I visited the Tonto Cliff Dwellings and mapped and photographed them. When I visited them next in 1934, I found that a number of walls and ceilings had fallen. Particularly noticeable was a room in the Upper Ruin. This room is numbered 28 on the map of Ruin No. 2.

In December, 1920, this, the largest room in either ruin, was entirely intact, both doors and the window being tightly sealed. When I next visited the Ruin in May, 1934, both doors and the window had been broken open, and the ceiling entirely demolished. Although the room is about thirty-five feet long and fifteen feet wide, at present there are only two timbers remaining in it. One is an upright post and the other a beam about sixteen feet long. I have been unable to find anyone who knows when or by whom the room was broken open. No doubt there were valuable finds in it for otherwise it would not have been so carefully sealed by its prehistoric inhabitants. It would seem that the vandals were no ordinary pot-hunters, since the roofing timbers, of which there must have been several, were taken away. Or, possibly, the vandals used them for fuel for their camp fire, and the rains have since washed away all trace of the fire.

The Tonto National Monument consists chiefly of two groups of ruins. There are said to be other smaller ruins in the vicinity, but I have not visited them, nor do I know the exact location of them. Because of the great width of the canyon in which both these ruins are located, it is very difficult to photograph them.

The Lower Ruin is the smaller of the two. At present, the traces of 38 rooms are visible. Apparently part of the overhang of the cliff roof has fallen, and probably carried away some of the outer rooms. This is particularly evident in rooms 1, 2, 3, 4, 17, and 18. Room 9 is a hallway, two feet eight inches wide and 23 feet nine inches long. One door each opens into this hall from rooms 8, 10, and 14. Room 14 is the best preserved room in the Monument. Even at the present time, its walls and ceiling are intact, the primary beam supported by one center post. In the southeast corner of the ceiling there is a fair



RUINS NO-1



sized hatch, probably used as an exit for smoke rather than for human traffic, since there are two doors at the ground level, and one window. The ceiling now is very weak, due to the fact that the part of the cliff receiving the end of the primary beam has crumbled. However, in 1920 this ceiling was in excellent condition, and my companion and I made our bed above it on the last night of the year 1920.

Room 8 of this Lower Ruin is very interesting. It consists of a shallow, irregular cave in the back of the cliff, across which a substantial wall, ten and one half feet long, has been thrown. This wall does not appear to have reached the roof of the cave. If such is the case, the chamber was not likely a granary. It was probably a storage room for some article that was not susceptible to attack from rodents.

A present, there are evidences of two rooms, or a room and balcony with high parapet, above rooms 7 and 8. One large room occupied the space above the hallway and room 10. At least one story is yet visible above rooms 2, 6, 14, 15, 18, 19, and 20.

THE UPPER RUIN

About half a mile away, and three hundred feet higher, is the second ruin of this group, designated by the National Park Service as the Upper Ruin. This ruin is almost twice as large as the Lower Ruin, 64 rooms yet being visible. A great deal of the overhang of the cave roof has fallen, the canyon below being filled with huge boulders. Undoubtedly many rooms were crushed by this falling overhang.

There are a number of interesting details connected with this ruin. The sealed room which has been broken open, as mentioned above, is room 28 of this Ruin. Room 4 is a hall of varying width and forty-six feet seven inches long, with doors entering into it from rooms 7, 8, 10, and probably 9. In the cave wall in room 30, there is a natural tunnel which gives some evidences of having once been a spring. The reed ceiling of room 5, the sahuaro-rib ceiling of room 20, and the half reed and half sahuaro-rib ceiling of 21, show the variety of building materials used. The diameter of the primary poles seems to indicate that at this point the building was originally three stories high. Room 27 is about six feet higher than room 23. There a primitive step had been installed in order to reach the upper room.

Several of the plates show the type of wall structure utilized in this cliff dwelling. From a mere reconnaissance, it appears that the two groups were contemporaneous. The walls, in general, are built up of roughly shaped stone, laid ashlar-fashioned, in very thick layers of adobe. In fact, the mud mortar is about half the thickness of the stones. This is plastered over with an inch to three inches of adobe plaster. The finger-prints of the prehistoric plasterers are very abundant. The usual structural defect of the cliff dwellings--failure to tie in the

walls at their junctions--is in evidence here.

The floors are usually of tamped mud, although in some rooms, the native rock of the cliff was left untreated.

A typical first-floor ceiling and second-floor floor was constructed as follows: a large log was embedded in the walls of the room, and usually supported by an upright post in the center. At right angles to this primary beam, smaller beams were placed, being embedded in the other two walls of the room. Upon these secondary timbers layers of sahuaro ribs or bamboo canes were placed. In some cases, these elements were lashed together with yucca cords. Upon this mat, large rocks, about six to eight inches thick were placed at irregular intervals. Mud was poured over and around these rocks, covering them to the depth of two or three inches.

It is worthy of note that practically all the doors in both these ruins are half-T in shape. I have found no mention of this type door in any ruin except in the nearby Canyon Creek Ruin. There, Dr. Emil W. Haury reports only two for the entire group. (Haury, 1934. The Canyon Creek Ruin and the Cliff Dwellings of the Sierra Ancha.) Generally, the lintels are of two poles about three inches in diameter. The sill, and the sill of the half-arm of the T are of flat rocks.

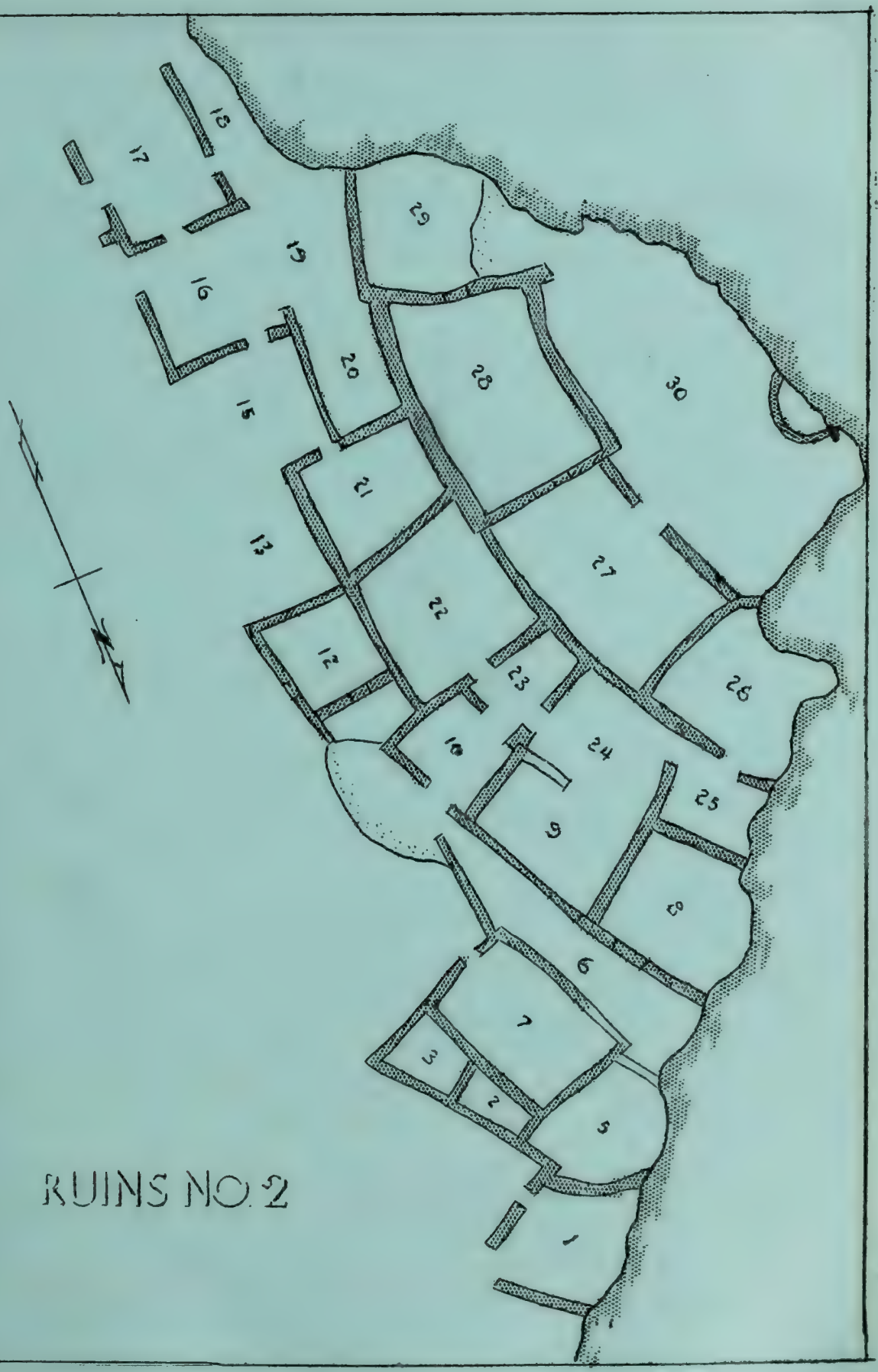
ARTIFACTS

Due to the vandalism at this group of ruins, very few artifacts are available. Their textiles seem to be among the finest of the Surface Pueblo Period. (Pueblo III-IV). The few sandals I have been able to examine are typical of the period. Two sandals from Tonto are of split yucca leaves in simple basket weave. Two of them are more carefully woven of yucca cords, with woven ties. Haury reports almost identical sandals from the Canyon Creek Ruins and the Sierra Anchas.

Several pieces of cotton cloth in over-and-under weave have been taken from the Tonto Ruins. One of these, a piece about 18 inches wide and about four feet long, is in the possession of Dr. Cron of Miami, Arizona. It is ornamented with the weft-wrap openwork technique, falsely called "eyelet work." Haury reports also a fragment of "gauze-weave" from the Tonto Ruins.

One of the most excellent pieces of prehistoric textile art was found with a burial in Tonto Ruins some years ago by Mr. Rupke of Coolidge Dam, Arizona. It is a cotton gauze upper garment woven in intricate design.

Charlie R. Steen, formerly custodian of the Tonto National Monument, reports the discovery of a fragment of a very rare weave known as the "Slit Tapestry Weave." This, a 11.5 centimeter fragment of a tump line, is described at length in American Anthropologist, Vol. 37, No. 3 (pt. 1)



RUINS NO. 2



Page 459. The only other example of textile art from the Tonto Ruin which I have seen, is a perfect yucca olla ring in the museum case of the custodian's residence.

Among the artifacts of stone which have been found here are metates, mortars, and manos; three-quarter grooved axes, and arrow-polishers. A fragment of a paint mortar is also in the Tonto National Monument museum case. An abundance of bone awls and punches have been found.

I have seen only one specimen of pottery from these ruins, an almost complete olla of Gila polychrome, about eighteen inches in diameter. In a personal interview, Dr. Haury stated that the chief wares of the Ruin are Gila polychrome and Salado redware.

Quantities of corn kernels and cobs, squash stems, and acorns in the debris of the Ruins indicate the food staples of the prehistoric occupants of these cliff dwellings. Even today, after the depredations of hundreds of visitors, great quantities of yucca quids lie about the floors of both ruins.

CONCLUSIONS

In general, the Tonto National Monument ruins very closely resemble those of the Sierra Ancha region. The masonry is almost identical. There is great similarity in their textiles. Geographically, they are neighbors, apparently culturally the same, and contemporaneous.

Although there is an abundance of wood in both the Upper and the Lower Ruins, only one piece has yielded to dendrochronology. From a loose portion of a pine pole in the Upper Ruin, Dr. Emil W. Haury secured the date 1346. (Southwestern Monuments Monthly Report, May, 1935, page 255). The last date secured in the Canyon Creek Ruins by Dr. Haury was 1348.

RECOMMENDATIONS

A scientific excavation and reconstruction program should be carried out at this National Monument. There is yet time, but within a few years, several more walls will collapse unless something is done very soon to strengthen them. What appears to be a plaited mat of pine needles is visible a few inches under the debris in room 14 of the Lower Ruin. This room adjoins the cave wall at the back, and appears to be a refuse heap. Undoubtedly it would yield much cultural material.

The talus slopes in front of both ruins should be carefully excavated. It is possible that ceremonial chambers might be found along the face of the canyon wall immediately in front of the cliff dwellings.

If a suitable museum building were constructed, it is possible that

much of the material that is located elsewhere could be returned to the museum at the Ruins.

Since this is the southernmost cliff dwelling of Arizona which can be reached with any degree of ease, it should be preserved and partly reconstructed.

****

VISITOR RESEARCH AT CASA GRANDE

Some most interesting visitor research work has been conducted during the past month at Casa Grande National Monument and a preliminary report has been turned in, giving the statistics thus far gathered by Custodian Jack Winter.

In his letter of transmittal Custodian Winter says:

"AS requested in your memorandum of March 14th, a survey of questions asked by visitors has been conducted for 30 days. The period chosen was March 15 to April 15 and the results are shown on the attached sheets.

"It is believed that the 195 questions listed cover nearly all that is asked at the monument. These were asked in thirty days but it does not appear that the total would exceed three hundred in the course of the entire year.

"Of the number of times that these questions were asked it is believed that we have recorded about one fifth. Some days no one had time to record questions. Sometimes the recording was so long after the party had been guided that many questions were lost. Of course no one attempted to write down questions as they were asked in the ruins or the museum. The usual proceedure was to sit down in the office after each trip and write down all questions that could be remembered. Sometimes the guide would be too busy to do even that. So we feel sure that we did not catch more than one fifth of the questions in the matter of repetition. We do believe, though, that we got most of the different questions.

"Lest anyone thinks that these questions all cover points that the guide failed to mention, I wish to say that it doesn't really matter much if the question asked has already been answered in the lecture. Some questions are asked prematurely, too, before the guide has had a chance to cover the points in his talk. Many are asked after the guide has already given the answer in the course of his talk. This last is not entirely due to dumbness on the part of the visitor. We fling such a mass of information at them that we really should not blame anyone for failing to digest the total at the first hearing. Sometimes I wonder if we should hand out so much fact verbally. It might be better and easier on the average visitor if the lectures were not so extensive but were

supplemented by a printed folder for those who were sufficiently interested. Of course, visitors should be given every opportunity to ask questions."

We agree with Jack that it seems to matter little if the guide has already made the point, certain questions will almost invariably be asked after the information has been given. We agree that this is partly, at least, due to the fact that we are handing out information faster than the visitor can absorb it. In the nature of the case this must be so because the visitor stays such a little time and there is so much he wants to know. We doubt the advisability of cutting down the talk and handing out the other information in a folder. We rather favor of giving the information to the visitor as he walks around and sees things, well knowing that a large part of it will slip out of his mind, and then giving him the folder which will, if he reads it, jog his memory and bring back the statements we made to him while he had the thing before him. In other words, the folder is a good idea but is no excuse for cutting the visitor's trip. There is no meat for argument, in these questions reported here, that we tire the visitor out and should turn him loose sooner. Visitors with museum or ruins fatigue would not be asking questions, especially questions as intelligent and as much to the point on the whole as we have here. One angle of our visitor research should be directed at determining if we do hold the visitor too long at our monuments, but these questions seem to us to have little bearing on that and that problem must be attacked in some other manner.

CLASSIFICATION OF QUESTIONS

	No. of Questions	Times asked.
1. Ruins and ancient inhabitants----------	75	973
2. Material in Museum----------	14	255
3. The Ranger-guide himself----------	11	158
4. Modern buildings on the monument--------	10	106
5. National Park Service----------	4	30
6. Wild Life----------	15	137
7. Botanical Life----------	16	138
8. Modern Indians----------	5	38
9. Monument area and facilities----------	22	220
10. Climate and weather----------	10	77
11. Other Parks and Monuments----------	3	68
12. Travel Information----------	10	109
	195	2,309

It will be noted at once that the first two classes, dealing with the ancient people, their ruins, and their material in the museum are the cause of more than 47% of the number of questions and of 53% of the number of times asked. This is as it should be; the visitors have manifested the greatest interest in the things for which we have made the

monument. Wildlife, Botany, and Modern Indians, grouped together come next.

THE SEVENTY-FIVE QUESTIONS ASKED 973 TIMES UNDER CLASSIFICATION 1, RUINS AND ANCIENT INHABITANTS, WERE AS FOLLOWS:

Times asked.	Question
64	Is this original wood?
48	What became of these people?
43	Where did they get their water? See 21-25-12-16.
41	What was the name of these Indians? What tribe was this?
41	Did you put this cement on the walls?
39	How old are these ruins?
35	Why did they abandon these villages? these compounds?
35	Do the doors indicate a small people? (see 26)
35	Is this adobe material?
33	How high was the outside wall of the compound?
31	How did they get to the upper floors? (of Casa Grande).
27	What became of the timbers? (Of Casa Grande). See 64.
26	Why did they have such low doorways? (See 35)
25	Where are the ancient canals? (See 16, 21, 12) See 43.
25	Have you found the burial ground?
25	What was that hole in the third story? (West wall, north room).
22	What are these holes for? (Ventilators).
22	How many people lived in this village? See 11.
21	How long has this roof been over Casa Grande?
21	How did they get their water? See 16-25-12.
21	Didn't they have fires in here? See 10
19	How did they light this inner room?
17	Did Casa Grande have a roof when first built?
16	Are these ruins older than the cliff dwellings?
16	Did they dig wells? See 21-25-43-12.
15	Is this the outside wall?
13	Is any excavation going on now?
12	Is this the original plaster?
12	Was anything found in these buildings?
12	Where can I see a canal? See 25-21-16-43.
11	How many people lived in this building? See 22
10	Where did they have their fires? See 21
10	How close to here did the canals come? See 21-25.
10	How high is this building? How many stories did this house have?
8	Were these people Indians? See 41
8	How does Tonto compare with Casa Grande?
8	Are these Indians represented anywhere today? See 48
8	Where did this building material come from?
7	Was this a chief's house?
7	How thick are these walls?
6	Did these people raise cattle? See 4-3-2.

QUESTIONS ASKED (CONT.)

Times asked	Question
6	Did this tribe also inhabit Pueblo Grande?
6	Did they use adobe material?
6	Do you believe they were Masons? (Belonged to Masonic order)
4	Did they grow cotton?
4	Can finger prints be discovered on the walls?
3	What crops did these people raise?
3	Did the Spainards build this building?
3	What is the evidence that these ruins date back 1,000 years?
2	Are there other walls underneath these?
2	What are the dimensions of Casa Grande?
2	Did they know how to mix straw with mud?
2	Did they grow tobacco?
2	How far is it from this village to the river?
2	Did they ever take their finger prints?

The following were asked once eash:

Did the Indians build this present roof over Casa Grande?
Were these holes used to shoot guns through? (Rafter holes).
Is that where you are excavating? (Potsherds on wall, NE corner).
In which room did Font hold mass?
Any evidence on unit of measure?
Did these people come from the north?
Any indication as to age they reached before death?
Was their culture higher than the present Indians?
Is this wall material samed used in making pottery?
Did they have engineering knowledge?
Why isn't this 1,500 years old?
Is the excavtion at Pueblo Grande complete?
Were these people related to those around Mexico City?
Nobody knows anything about these people do they? (After complete ruins and museum trip).
What points argue against the Big House as a Kiva or ceremonial house.
Did this outer wall sink into the ground this much?
Are the holes for the north star stopped up?
How do you get in there?
Isn't this odor from the Indians that lived here?
What about the dates on the walls?

The first thing that struck us about these questions are what we might call for want of a better phrase, the high percentage of hits registered? It is only in the 'once asked' list that you find a few foolish questions.

The following condensed tabulation of the most important questions seems to show what the average visitor wants to know and is given here

for further study.

CONDENSED TABULATION OF MOST IMPORTANT QUESTIONS

	Times asked	Total
Who were these people?	41-8	49
What became of them?	48	48
Why did they leave?	35	35
What was their stature?	35	35
How many were there in village or building?	22-11	33
How did they live?		
Water questions	43-25-21-16-12	117
Buildings?	31-26-21-19-10	107
Crops, etc?	6-4-3-2	15
How old are these ruins?	39-16-8-3-2	68
About materials	64-35-27-6	132
About dimensions	38-10-7-2	52
		691

One question is remarkable for its absence: "Where did these people come from?"

We hope to report further next month on these questions.

****

At Pueblo Grande

(Ed. note: Some months ago Odd Halseth, director of Pueblo Grande, Phoenix, Arizona, started to accumulate visitor questions with the idea of devising efficient methods to answer them. Temporary Ranger Paul Beaubien at Saguaro National Monument independently had hit upon the same scheme at about the same time. Foreseeing valuable possibilities, Park Naturalist Rose issued a memorandum asking monument custodians to accumulate similar data. The preceding article is an analysis of the Casa Grande report, the first received. Following are some of the questions asked at Pueblo Grande, Mr. Halseth very kindly having granted permission to use them in the Supplement. His methods differed from those used by the Casa Grande staff in that he gave writing materials to unhurried visitors, while Casa Grande men were forced to pick up the normal run of questions on regular guided trips. Other questions asked at Pueblo Grande will appear in this section of the Supplement from time to time.)

Questions Asked by College Students and Graduates:

1. Why did these Pueblo Indians move away from the site of these ruins?
2. Approximately how long did it take the Indians to dig the irrigation canals and about how much land did they cultivate?

3. I have noticed west and south of Phoenix a long ridge. Some say this is an old prehistoric irrigation canal. How about this?

4. The above ridge is prominent between laterals 16 and 17 - one-half mile south of Buckeye Road.
5. At its greatest development, about how many people inhabited the pueblo?
6. Are the Indians who visit Pueblo Grande interested? antagonistic? etc.?
7. Were the Indians at Casa Grande Ruins friendly to the Indians at Pueblo Grande?
8. Are the ruins prehistoric and if they are - what ages were they built?
9. Are there any more ruins built at the same time as these? Any nearby?
10. Were they built before or after the Casa Grande Ruins?
11. What was the nature of the tribe that inhabited them?
12. What other Indians were their friends? Enemies?
13. In what ways, if any, do they differ from the other Indians in Arizona?
14. Did they have any special methods of making jewelry, pottery, basket making?
15. What did the tribes excel in?
16. Does the timbers, if any has been found, fit into the tree ring? The theory of judging age.
17. What became of the Indians who have vanished?
18. How did the Indians live at Casa Grande without water?
19. Did the prehistoric Indian have a higher civilization than those found by white men? If so, what caused them to lose this civilization?
20. Which is the older? Casa Grande or Pueblo Grande?
21. Could this have been one of the seven cities of Cibola?
22. What did these people eat?
23. How did they prepare their food? Type of clothing? Shoes? Material? etc.
24. What was their attitude toward the sun as evidenced by location of doors or openings?
25. Size of families?
26. Is it necessary to have an extensive knowledge of archeology to get into this work?
27. What are the qualifications for entering same? Where does one apply?
28. Are the different Indian Ruins in the Southwest under Government or local supervision?
29. Why have there been no works of similar nature done in known sections of the East where Indians were known to have lived? i.e.: Mass., R. I., etc.?
30. If these present ruins at Pueblo Grande were termed "the community house" what kind of houses did the majority of Indians live in?
31. What are the ruins of?
32. What has been taken out of them?
33. Has any connection with any particular Indian tribe been found?
34. Is it possible to place the use of the various rooms or has any idea of the Indians' activities been reconstructed?

35. How does the excavation take place and how long has it been going on?
36. In what way do the Indians of North America differ from those of Mexico and South America?
37. Why did the Indians move from this site - if they did?
38. Did the Indians who inhabited the top layer of this ruin eat the same staple foods? Corn, wheat, as those living on the bottom?
39. How did the people living here tell time?
40. What mode of travel did they use?
41. Is there any connection between these Indians and those of Mexico?
42. Did these Indians work in metal as well as clay (art)?
43. Did animals of which we know nothing live here?
44. What kind of clothing did they wear? Did they make the material?
45. How do you determine the antiquity of these ruins?
46. Are there any maps of ancient irrigation canal lines?
47. Also of S. W. Ruins - giving locations and brief description.
48. Did the Indians (ancient and modern) regard gold and silver as unlucky or did they just not bother themselves to work it?
49. What is the connection, if any, between the American Indian and the Eskimo, or what is the latest theory?
50. Is it not possible that the primates could have developed in all parts of the inhabited globe simultaneously as far as conditions are concerned?
51. What are the mostly used Indian medicines?
52. When do the Indians have their ceremonies?
53. How long does the average Indian now live?
54. How did the Indians haul water in the dry seasons?
55. When the first white men came to Arizona, did they find the Indians living or using such so-called ruins as Montezuma Castle, Pueblo Grande? When were such ruins abandoned?
56. Is this ruin and the contents found within of the same type as others found in Arizona?
57. Has anything new been found in one that is not like anything found in the others?
58. Can you judge the date of this ruin from what has been found?
59. What is the description of the things that have been found in it.
60. From the findings in each ruin, is each kind of basketry, pottery, etc., are any of them similar in design? Material?
61. What are some of the designs?
62. How many are there?
63. Are there any traces as to the tribe of Indians that settled there?
64. How would it be possible for one to tell the age of the ruins and for how long were they undisturbed after the Indian vanished?
65. Were there any other nearby or were these segregated from the rest and built the ruins as a shelter from some unknown cause.
66. Are the articles being collected from the ruin itself, or from some other part of the territory?
67. What does Dendrochronology mean? What does Hohokam mean? How do you account for the holes in the floor? Were these ancient Indians

related to Mayas and Aztecs from Mexico?
38. Have these tribes known how to always make pottery, basketry and stone implements?
39. Are there any traces of related tribes around?

****

BACTERIA IN TUMACACORI WALLS

(Article from Arizona Republic, April 17, 1936)

Deathless bacteria have been aroused from a period of 249 (?) years of suspended animation and again are busy reproducing themselves.

Dr. Ira B. Bartle, who has spent most of his life in studying spores and fungi, reported success today in resurrecting the small creatures which were put to sleep 2½ centures ago by the Indians who built the Tumacacori mission near Nogales, Arizona, in 1687.

He finds the bacteria are creatures of environment and conditions just as are humans.

Last month Dr. Bartle went to the old mission founded by Eusebio Francisco Kino almost a century before Fra Junipero Serra established the California missions. From the four-feet thick adobe wall, forming the staircase to the belfry, he obtained a core of the inner adobe brick. Extreme care was taken in the procedure to insure that the specimen was not contaminated in the operation.

In sealed, sterilized tubes, he took the adobe material to his laboratory here, and succeeded in bringing the bacteria out of their lethargy.

"The samples obtained were incubated on gelatin agar and dextrus plates and showed 94 colonies to 60 square centimeters in 24 hours," Dr. Bartle reported. "These colonies are light gray, of a floculent texture and are neither elevated nor depressed, but rather flat with the surface of the media.

"In 43 hours this plate showed 131 colonies. These colonies under the microscope showed soil bacteria and spores. No fungi have been found as yet. The life cycle of the predominant spore is about 96 hours; is homosexual and reproduces by miltosis."

In duscussing the putting to sleep of these minute creatures, Dr. Bartle said:

"When the adobe is made these spores and bacteria live and multiply as long as there is moisture and oxygen. As this disappears they

begin putting on a thicker cell wall and the protoplasm thickens and contracts until eventually respiration and reproduction cease and they go into a state of suspended animation, in which condition they are immune to almost every condition except fire itself.

"You cannot freeze them under any ordinary condition and it takes strong antiseptics some time to kill them. Now the ones in the more exposed locations occasionally get a little more moisture and they start a new life cycle for a few thousand generations, and in each of these there is a loss because only the stronger onces live. It is always survival of the fittest."

KEET ZEEL CANYON VEGETATION

By K. C. Karbchuer

Trees and Shrubs

Conifers	
Fir, Douglas	Pseudotsuga taxifolia
Fir, White	Abies concolor
Juniper, ground	Juniperus communis
Juniper, utah	Juniperus utahensis
Juniper, one seed	Juniperus monosperma
Juniper, Rocky Mt. red	Juniperus scopulorum
Pine, ponderosa	Pinus ponderosa
Pine, pinon	Pinus edulis
Spruce, Eugleman	Picea euglemanii
Spruce, blue	Picea pungens

Other trees and shrubs

Antelope brush	Purshia trideutata
Apache Plume	Fallugia paradoxa
Aspen	Populus tremuloides
Birch bog	Betula fontinalis
Black brush	Coleogyne ramosissima
Box Elder	Acer negundo
Buckthorn	Rhaninus spp.
Cactus	Opuntia spp.
Ceanothus or Buck brush	Ceanothus fendleri
Chanuse or White Greasewood	Atriplex canescens
Chokecherry black	Prunus melanocarpa
Cliffrose	Cowania stausburi aua
Cottonwood	Populus occidentalis
Currant, golden	Ribes aureum
Currant, black	Ribes spp
Estafiata or Fringed wormwood	Artimisia frigida
Fendler brush	Fendlera spp

Other trees and shrubs (cont.)

Gooseberry	Grossularia spp
Grooseberry, Mountain	Ribes montigenum
Greasewood	Sarcobatus vermiculatus
Manzanita	Arctostaphylos pungens
Mistletoe	Phoradendron spp.
Mormon tea	Ephedra viridis
Mountain mahongany	Cercorpus intricatus
Oak, gamble	Quercus gambelii
Oregan Grape	Odostemon repens
Poison oak	Rhus toxicodendron
Prickly Pear	Opuntia chloritica
Rabbit brush, large	Chrysothamnus spp.
Rabbit brush, gray	Chrysothamnus spp.
Rabbit brush, small	Chrysothamnus spp.
Rose	Rosa fendleri
Sagebrush, common	Artimisia tridentata
Sagebrush, small	Artimisia spp.
Serviceberry	Amelanchier jonesii
Silverscale	Lepargyrea rotundifolia
Snakeweed	Gutierrezia sarothrae
Joint grass	?
Lambs quarter	Chenopodium album
Larkspur low	Delphinum arizonicum
Lobelia	Lobelia splendens
Loco	Astragalus spp.
Loco, purple	Astragalus mollissimus
Lupine	Lupinus spp.
Maidenhair	Adiantum capillus
Mallow	Malva spp.
Marisposa lily	Calachortus nuttallii
Milkweed	Asclepias spp.
Monkey flower	Mimulus spp.
Mustard	Brassica spp.
Nettle	Urtica spp.
Pentstemon	Pentstemon spp.
Peppergrass	Lepidium spp.
Phlox	Phlox spp.
Red and yellow pea	Lotus wrightii
Russian thistle	Salsola pestifer
Scarlet bugler	Pentstemon spp.
Spiderwort	Tradescantia spp.
Sunflower	Helianthus spp.
Thistle	Cirsium spp.
Virginia creeper	Parthenocissus vitacia
Wild buckwheat	Eriogonum spp.
Wild candytuff	Thlaspi coloradense
Wild onion	Allium spp.
Wild potato	Solanum fendleri

SOUTHWESTERN BIRD BANDING TOTALS

Species	Bandelier		CasaGrande		Chaco		Navajo		Pipe Spr.		Tumacacori		Walnut		Wupatki		Total
	Prior	Apr	Prior	Apr	Prior	Apr	Prior	Apr	Prior	Apr	Prior	Apr	Prior	Apr	Prior	Apr.	
Bluebird,Ch-b.													215				215
Cardinal, Ariz.			1								1	3					1)
Crossbill,Bend.													17				17
Chickadee,Mtn.							6						3				9
Creeper,R.Mtn.	2																2
Dove, W.Mourn.			11	2								1					14
Dove, Inca			2														2
Finch, House			129	3													132
Flicker,Red-sh	1																1
Fl'c't'r, Ariz.			2														2
Gldfnch,Gr-bkd													2				2
Jay,Long-crstd	2																2
Jay, Woodhouse	3						6										9
Junco,Gra-hded	51	5					8	4									68
Junco, Montana							9										9
Junco,Pnk-side	7																7
Junco, Red-bkd	9						2						38	4			53
Junco,Shufeldt	7						13	1					10	1			32
Mockingbird,W.			2														2
Nuthatch, Pyg.	21												25	1			47
Nuthatch, R.M.	2												6				8
Owl, W. Horned			1														;
Phoebe, Say			19									4					23
Quail, Gambel			58									1					59
Roadrunner			4														4
Robin, Western													7				7

Species	Bandelier		CasaGrande		Chaco		Navajo		Pipe Spr.		Tumacacori		Walnut		Wupatki		Total
Spscker,R-nape													4				4
Spscker, R. Mtn													2				2
Shrike,White-r.			3														3
Siskin, Pine													1				1
Solitaire,Town.													7		15		22
Sparrow, Gambel			403	13						43		1					460
Sparrow,Lincoln			1														1
*Sparrow,W.Lark												4					4
*Sparrow,Nev.Sav.										1							1
Sparrow,WVesper			1														1
Sparrow,Wh-crn.							6										6
Swallow,Ro-wng.			3	2													5
Thrasher,Bend.			5								1	2					8
Thrasher,Criss.			7														7
Thrasher,Sage															2		2
Titmouse, Gray													1				1
Towhee, Canyon											2	3					5
Towhee,Gr-tail			2								4	1			1		8
Towhee, Spurred	1							1									2
Waxwing,Cedar															1		1
*Woodpkr,Cactus												1					1
Woodpkr, Gila			8														8
Woodpkr,Mearns													9				9
Wdpkr,RM Hairy	1																1
Wren, Cactus			35	1							1						37
*----new species to this listing																	
SUB-TOTAL	107	5	607	21	0	0	50	0	0	44	9	26	347	6	19	0	
TOTAL		112		718		0		56		44		35		353		19	1337

BANDELIER BIRDS

By Betty Jackson

Birds have been invading the canyon this month in hoards. Most of the earlier birds are still here -- Robins, Juncos, Ravens, Solitaires, Canyon Wrens, Nuthatches, Spurred Towhees, and Jays -- but even they are beginning to change their chief interest from food to mating.

On the eleventh came the White-Throated Swifts and the Rocky Mountain Evening Grosbeaks. The Swifts will stay all summer, but the Grosbeaks will go soon, if they haven't already. Ravens are mating, and should have nests, but I haven't found them yet. The Rocky Mountain Hairy Woodpeckers and the Flickers are mating, too. House Finches are becoming common in the Detached Section, in flocks of pairs, but I've only seen one in the canyon.

A Red-Winged Blackbird was here for a week early in the month, and later came a Brewer Blackbird, who is still here. He arrived on the sixteenth.

Audubon Warblers have been seen, down the canyon by Mr. Borell, and on the south mesa by me. A flock of Hoover Warblers came in while we were away, and are now to be seen flitting about the trees and bushes near the office. Though Bailey states that they are rare in New Mexico, I am sure of my identification.

Five Grey-Headed Juncos were banded.

I'm going to study hawks, and then tell you which ones came in this month.

****

RUMINATIONS

In looking over this issue of the Report and the Supplement, Chief, I am reminded of the old days when, if we wanted a thing done, we had to go out and do it ourselves. In spite of our best intentions we are liable to go soft if we don't watch ourselves and we have had such a multiplicity of hired help around to refer problems to that it is no wonder we were getting soft. Seeing, as reported in last month's Ruminations, that psychologists were not having a depression like the other experts, and therefore we couldn't hire one to study visitors for us, we have come around to where we ought to have started from in the first place and set up a little research bureau of our own.

Visitor Research will just be a side line with us, for of course our first duty is protection and the second is giving information, and with eighteen thousand visitors last month this was quite a little chore by itself, but as a side line, to keep the boys occupied, we have decided to try to find out how a visitor thinks and why. We have no

illusions about the size of the job we are tackling, for you see we have been handling visitors for a good many years; we don't think we are competent to get the very best results out of the time and energy we expect to expend, but there is no doubt that it ought to be done and if we haven't an expert on the roll who can do it, we will just have to go out and do the best we can. Mark you, we haven't any time and energy to waste and if I didn't think the results would more than pay for the expenditure of both we will have to make, I wouldn't start the boys out on it. We are modest up to a certain point, but, while admitting we are not experts in psychology, we think we can work just as hard gathering information as one who is, and, after we get a good body of information together and begin drawing conclusions maybe we can get an expert to come along and sit in with us.

Again was I impressed the other day when the two volumes of the December monthly reports of all the superintendents descended on my desk for perusal affording me the chance to gather pearls of wisdom. The thing that impressed me was that everything under the sun is gone into in great detail except the handling of visitors. I wonder why that is? I am not much interested in how many miles of new trails a man has built; what interests me is, how many visitors are using his trails and is there any way to increase that number? How long does his average visitor stay and why does he leave so soon?

Anyway, we are going to have some fun trying to find out what visitors think. Which reminds me of an interesting experiment described to me the other night by the fine Secretary of one of our fine western museums. It seems there was a door leading from the museum exhibit rooms back to the offices and laboratories and, although it was marked "Private. No Admittance" visitors had a great way of going through and causing a deal of bother to the officials who were interrupted thereby. Several changes of wording were tried with no better success until some one thought of the thing that stopped them cold: "For members only, <u>why not subscribe</u>?"

Odd Halseth, who is the only City Archaeologist in the United States so far as we know, is also interested in these visitor problems and has promised to share his information with us and we have the first installment of questions his visitors ask him, at Pueblo Grande Ruin in the edge of the City of Phoenix, in this Supplement.

Bob Rose happens to be in the field at this writing and we just didn't have the time to digest the material and catch up his Visitor Contact tables this month. We will probably get this done by next month and being a month late won't hurt the figures any. We have no extra funds to take on a little help over the month end rush and so we have a rather hectic time for a few days around the office if one or two of the force happens to be away as is the case this month. I wonder why it is that so many deadlines occur around the first of the month? When

anybody wants a report from a field man he thinks it is a brilliant inspiration to set the deadline on it between the first and the tenth, thinking, I suppose, that all the other Departments, Bureaus, Divisions and Sections will set theirs on the thirteenth or twenty-third and that no one else will think of the first of the month! Anyway it keeps a field man from worrying over the fact that he is a field man, so there seems to be some value to it.

Incidentally, we printed some separates of Van's report on Sunset Crater and ran them as our No. 3 Special Report. Also we printed three hundred of the Pipe Springs article by Leonard Heaton and put on special covers so he will now have something to send people who are constantly writing him for information on that monument.

Also, and again incidentally, we have received some nice compliments on that series of Special Reports from folks who matter, and the Southwestern Monuments Monthly Report is again noted in the current issue of American Antiquities. While, as I said above, we are modest up to a certain point, it doesn't keep us from pointing with pride.

Note the new Report and Supplement covers. We think Tov. did a nice job, don't you?

Cordially,

Tom Boss

Arizona Archaeological Center Library

GENERAL INFORMATION ON
CHACO CANYON NATIONAL MONUMENT
CROWNPOINT, NEW MEXICO

The Chaco Canyon National Monument is located in San Juan and McKinley counties, Northwestern New Mexico. The Monument is reached by leaving Highway U. S. 66, at Thoreau and traveling 65 miles north, over an Indian Service road, to the monument headquarters. The road is well marked with National Park Service signs. It is a graded road maintained by the Indian Service. The Monument is reached on the north by traveling State road 55, south from the little town of Aztec and Aztec Ruins National Monument, a distance of 40 miles, then take state road 35 a distance of 24 miles, to the Monument headquarters. Excellent tourist accommodations may be had at Gallup on the South, Aztec and Farmington on the North.

The Chaco Canyon was proclaimed a national monument March 11, 1907. It is administered by the Department of the Interior, through the National Park Service. A permanent custodian is stationed at the Monument for the guidance and information of the visitors, as well as the protection of the Monument. It is open to the public every day in the year. The National Park Service maintains a picnic area; food and supplies may be secured at the Chaco Canyon Trading Post, at the Monument headquarters. Normally good tourist accommodations may be had at a privately-owned lodge in the Monument.

Within the Monument boundaries 18 major ruins are found. These ruins are without equal in the United States. Together with the cultural material recovered from the abandoned rooms, these ruins represent the very Zenith of Pueblo civilization in prehistoric times. No other archeological area in the entire Southwest exhibits such a high development.

Pueblo Bonito, one of the major ruins of the Monument, was intensively explored by the National Geographic Society from 1921 to 1927. Pueblo Bonito covers more than three acres of ground; in its heyday, it had about 800 rooms and 32 kivas or ceremonial chambers. Mr. Neil M. Judd, of the United States National Museum, who conducted the excavations for the National Geographic Society, characterizes Pueblo Bonito as the largest apartment house built anywhere in the world prior to about 1887, and estimates that it, at one time housed 1,200 people.

Pueblo Bonito and other ruins of the Chaco were dated by the tree ring methods, by A. E. Douglas, Director of Steward Observatory, University of Arizona. Seven beams from the western half of Pueblo Bonito gave A. D. 919 as the building time. The major construction appears to have been in the 1100's, followed by a lesser activity 20 years later. Then it dwindled away, ending, so far as our evidence is concerned, shortly after 1130.

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
PETRIFIED FOREST NATIONAL MONUMENT
HOLBROOK, ARIZONA

May 1, 1936.

NARRATIVE REPORT FOR APRIL

The Director
National Park Service
Washington, D. C.

Dear Mr. Director:

Follows our regular narrative report for April, 1936.

GENERAL:

On April 30, Emergency Conservation Work activities ceased in this monument, C.C.C. Company 831 being transferred to the Forest Service in Colorado. On July 3, 1934, ECW Camp NM-1-A started their activities in Petrified Forest National Monument, making it a better place for the people to visit. During this 22 months a fine record of achievement has been accomplished in permanent projects completed. Among these may be mentioned the following:

Parking Areas, 11. Roads, approximately 8 miles. Water Development, (springs, wells, and pipe lines), 3 units. Telephone lines, 19-1/2 miles. Foot Trails, approximately 3 miles. Wildlife Reservoirs, 2. Boundary Fencing, approximately 12 miles. Stone Masonry Buildings, 2 Pumphouses, 1 Coal House, 1 Warehouse.

Also included are, Camp Grounds and Ramadas; Sidewalks; Sewers and Septic Tanks; Concrete Storage Reservoirs; Road Shoulder and Bank Sloping; Landscaping; Preparation of Building Sites; Seeding and Sodding; Road Obliteration; Education, Guide and Contact; Masonry Guard Rails and many other projects.

WEATHER:

Weather conditions have been very cool for this time of year, high winds and dust storms being the rule. Weather statistics follow:

Maximum teperature 83. Minimum temperature 22.
Mean Max. 71. Mean Min. 37. Mean 54. Precipitation .09 in.
Clear days 21. Partly cloudy 6. Cloudy 3.
Greatest precipitation in 24 hours, .09 inches, on 4th.

ADMINISTRATION:

Administration work has been carried on with periodical inspections of all projects. Due to the lack of clerical assistance, office work has piled up considerably. However, this condition will be remedied in the near future.

ROADS:

George W. Orr, contractor for placing bituminous pavement on the main highway, under the supervision of the Bureau of Public Roads, will commence actual oiling as soon after May 1, as possible

EMERGENCY CONSERVATION WORK:

Projects concentrated on and completed during the month were the Stone Masonry Coal Shed and Warehouse at headquarters, and the Boundary Fence. Some work has been done on the Blue Forest Senic Road, but this project will necessarily have to be left in an unfinished condition.

EMERGENCY CONSTRUCTION WORK:

Under this authority one man has been kept busy practically all the month with a power grader in post construction work.

RANGER AND MUSEUM WORK:

Personal service in the museum at Headquarters has been extended to 3,688 persons during the month. Selected enrollees have been used throughout the month to assist the undermanned ranger force and their activities will be greatly missed by the rangers and the traveling public from now on.

WILDLIFE AND RANGE CONDITIONS:

Range conditions are good. Owing to the precipitation during March the grass and all perennial flowers and small shrubs are showing greater growth than ever before.

One band of antelope was seen during the month near the Second Forest Wildlife Reservoir, and their tracks showed that they were watering there regularly. Another band seems to have established their home west of the First Forest. The number observed in these two bands was 23. Another band of 16 was observed in the southwest corner of the Monument during the month.

NEARBY ROADS:

Contract work is being carried on rapidly on U. S. Highway No. 66 on the north, and U. S. Highway No. 260 on the south, and within a few months both these highways will be completely paved through this vicinity.

TRAVEL:

The distribution of travel is remarkable. During April people visited the Petrified Forest in autos from every State except Delaware, Louisiana, Virginia and West Virginia. From foreign countries visitors registered from Canada, Mexico, Belgium, Germany, Java, England, Brazil, India, France, Australia, Italy, Fed. Malay States, Spain and Holland.

Among our visitors were, Lieutenant Commander Robert Roberts, U. S. N.; Lieutenant H. V. Hopkins, U. S. N.; C. H. Mayo and W. J. Mayo, founders of the Mayo Brothers Clinic at Rochester, Minnesota; G. L. McLane, LeVant Brown and Engineer Strickler of the U. S. Bureau of Public Roads; Colonel C. W. Furlong, U. S. A.

TRAVEL STATISTICS:

Through the Petrified Forest proper:

	cars	people
For the month	1,600	4,338
Previously reported	6,370	18,000
Total to date for travel year	7,970	22,838
Painted Desert Rim Drive (Est.)		
For the month	1,200	3,628
Previously reported	4,315	11,363
Total to date for travel year	5,515	14,991
Grand total to date	13,485	37,829

The only officer of the National Park Service inspecting the work projects during the month was W. H. Hirt, E.C.W. Inspector, who arrived April 2 and left April 4.

PUBLIC RELATIONS:

On April 15, the Superintendent and the Park Naturalist went to Gallup, New Mexico, and addressed the Gallup Rotary Club. The Superintendent talked on "The National Park Service and the Petrified Forest", and the Park Naturalist discussed "Proposed Museum Development at Painted Desert".

Respectfully submitted,

Chas. J. Smith,
Superintendent

Notes by Park Naturalist L. V. Walker follow on additional pages.

A TRIASSIC RESTORATION

There has recently been placed on exhibit in the Petrifie Forest National Monument, a diorama which is an attempt to picture the conditions that existed when the trees of the forest grew. At the present time it has been installed in the main room of the Rainbow Forest Museum, and it has proven very helpful in presenting the story of the Petrified Forest. It is especially interesting because of the fact that there is also exhibited along the same wall, two cases which contain fossil animals and plants which have been collected in the Petrified Forest. A most unusual and fortunate relationship exists between the diorama and the two cases of fossils, for every plant or animal represented in the restoration has been based on actual fossil specimens which may be seen in the two adjoining exhibition cases.

Visitor reaction to the diorama has been excellent and may be divided into two groups. In the first group is the ove day visitor who has not had scientific training. The diorama greatly appreciated by this group because it pictures for them the conditions that existed when the forest grew. The second group is composed of those whose training has been in geology and paleontology, and who have already formulated a very defin picture or idea of the old Triassic Forest. This group is extremely interested in the diorama because it differs conside ably from the old previously accepted theory of conditions dur Triassic time. A small number who still hold to the old theor are a bit troubled, due to the fact that the restoration is based on actual fossil specimens which tend to prove conclusiv that the restoration has been scientifically and accurately ma

The new theory as carried out by the restoration differs from the old in the following points:--(1) It infers that the trees actually grew in the region where they are found today, even going so far as to show a stump being buried in place. (This particular feature is based on a recent excavation) (2) It shows dense Fern and Cycad jungles growing in Araucaria forests that were locally luxuriant. (3) The restoration indicates that log accumulations are associated with channels. (4) Channels, lenses. and flood plain deposits tend to indicat cycles of erosion and deposition.

The fact that the restoration is so well accepted by the general public and so startling yet convincing to the geologist and paleontologists, seems ample proof that it is proving most successful, and credit should be given all technicians and artists who had a part in its preparation. The diorama was prepared in the field office of the Division of Research and Education, Berkeley, California, and frequent suggestions and criticisms were very courteously given by paleontologists of the University of California.

M. V. Walker
Jr. Park Naturalist

Southwestern Monuments . . .

MONTHLY REPORT . MAY . . 36 .



DEPT . OF . THE . INTERIOR .

. N . P . S .

SOUTHWESTERN MONUMENTS
MAY, 1936, REPORT
INDEX

CONDENSED GENERAL REPORT

Travel----------325
General----------326
Administration----------326
Maintenance, Improvements, New Construction----------327
Activities of other Agencies in Monuments----------328
Flora, Fauna, Natural Phenomena---328
Use of Mon. Facilities by Public--329
Protection----------330
Miscellaneous (Nail Count)-------330

REPORTS FROM THE MEN IN THE FIELD

Aztec Ruins----------348
Bandelier----------352
Bandelier ECW----------356
Bandelier Forestry---------356
Canyon de Chelly----------346
Capulin Mountain----------358
Casa Grande----------341
Chaco Canyon----------350
Chiricahua----------338
Chiricahua ECW----------338
El Morro----------373
Gran Quivira----------332
Montezuma Castle----------356
Navajo (April Report)----------336
Pipe Spring----------334
Sunset Crater----------346
Tonto----------333
Tumacacori----------331
Walnut Canyon----------347
White Sands----------338
Wupatki----------342
Closing----------369

HEADQUARTERS STUFF

Branch of Education--------358
Visitor Contact Records, by Robert H. Rose----------363
Branch of Engineering----------366
ECW man-days spent on Educational Projects----------364

THE SUPPLEMENT

Tumacacori Choir Loft Problem, by Frank Pinkley & J. H. Tovrea-------376
White Sands Geological Report, by V. W. Vandiver, Regional Geologist-381
An Interesting Room at Wupatki, by James Brewer----------401
Visitor Research-------
At Bandelier; question list, by Earl Jackson----------403
At Tonto; question list, by Woodrow Spires----------407
Parker's Wild Palms; Reprint of letter in Arizona Republic, Jan. 12, 1936----------408
May Bird Banding Totals----------410
Ruminations----------412

SOUTHWESTERN MONUMENTS
PERSONNEL

HEADQUARTERS, Southwestern Monuments, Coolidge, Arizona: Frank Pinkley, Superintendent; Hugh M. Miller, Acting Assistant Superintendent; John H. Diehl, Associate Engineer; Robert H. Rose, Assistant Park Naturalist; Dale S. King and Charlie R. Steen, Junior Park Naturalists; Millard Singerman, Clerk-Stenographer; Luis Castellum, ECW Clerk.

GENERAL FIELD MEN: Charles A. Richey, Resident Landscape Architect; J. B. Hamilton, Associate Engineer; J. M. Tovrea, Chief Engineering Aide; Andrew Clark, Topographer; Carl Schmidt, Rodman.

FIELD STATIONS:

1. Arches---Moab, Utah. J. M. Turnbow, Custodian.
2. Aztec Ruins---Aztec, New Mexico. Johnwill Faris, Custodian; Robert W. Hart, Ranger-Archeologist.
3. Bandelier---Box 669, Santa Fe, New Mexico. Earl Jackson, Custodian; J. W. Hendron and Alfred Peterson, Temporary Rangers.
4. Canyon de Chelly---Chin Lee, Arizona. Robert R. Budlong, Custodian; Doug Harritt, Temporary Ranger.
5. Capulin Mountain---Capulin, New Mexico. Homer J. Farr, Custodian.
6. Casa Grande Ruins---Coolidge, Arizona. W. J. Winter, Custodian; J. Donald Erskine, Park Ranger.
7. Chaco Canyon---Crownpoint, New Mexico. Thomas C. Miller, Custodian.
8. Chiricahua---Willcox, Arizona.
9. El Morro---Ramah, New Mexico. E. Z. Vogt, Custodian.
10. Gila Cliff Dwellings---Cliff, New Mexico. No Custodian.
11. Gran Quivira---Gran Quivira, New Mexico. George Boundey, Custodian.
12. Hovenweep---Cortez, Colorado. No Custodian.
13. Montezuma Castle---Camp Verde, Arizona. Martin Jackson, Custodian; Frank L. Fish, Ranger.
14. Natural Bridges---Blanding Utah. Zeke Johnson, Custodian.
15. Navajo---Kayenta, Arizona. John Wetherill, Custodian; Milton Wetherill, Trail Foreman.
16. Pipe Spring---Moccasin, Arizona. Leonard Heaton, Acting Custodian.
17. Rainbow Bridge---Rainbow Lodge, Arizona. No Custodian.
18. Saguaro---Tucson, Arizona.
19. Sunset Crater---Flagstaff, Arizona. J. W. Brewer, In Charge.
20. Tonto---Roosevelt, Arizona. Woodrow Spires, In Charge.
21. Tumacacori---Box 2225, Tucson, Arizona. Louis R. Caywood, Custodian; Martin O. Evenstad, Ranger.
22. Walnut Canyon---Flagstaff, Arizona. Paul Beaubien, Ranger.
23. White Sands---Alamogordo, New Mexico. Tom Charles, Custodian.
24. Wupatki---Flagstaff, Arizona. J. W. Brewer, In Charge.
25. Yucca House---Cortez, Colorado. No Custodian

CONDENSED REPORT

Coolidge, Arizona
June 1, 1936.

The Director
National Park Service
Washington, D. C.

Dear Mr. Director:

The Condensed Report for Southwestern Monuments for May, 1936:

TRAVEL

	May, 1936	May, 1935	May, 1934
Aztec Ruins	1,172	960	669
Bandelier	835	735	380
Capulin Mountain	1,500	1,500	700
Casa Grande	2,274	2,443	1,740
Chaco Canyon	496	340	235
Canyon de Chelly	158	23	---
Chiricahua	462	---	---
El Morro	---	---	---
Gran Quivira	575	396	318
Montezuma Castle	773	1,400	984
Natural Bridges	---	---	219
Navajo	---	134	---
Pipe Spring	392	414	632
Sunset Crater	283	248	---
Tonto	365	398	---
Tumacacori	705	1,281	1,035
Walnut Canyon	648	600	---
White Sands	11,880	---	---
Wupatki	166	125	9
Yucca House	---	---	---
Actual Reported Registration	23,682	10,997	6,921

The 14 monuments which reported both in 1935 and 1936 showed a decrease from 10,863 to 10,340---523 visitors, or 4.8%

The ten monuments which reported both in 1934 and 1936 showed an increase from 6,702 to 8,886---2,184 visitors, or 32.5%.

Last May's estimates for travel to Montezuma Castle and Tumacacori were too liberal. This fact, in addition to a count shortened by two days due to an earlier report deadline, would lead to the surmise that May, 1936, as a travel month was somewhere between 10 and 20% better than the same month in 1935; more than 30% better than May, 1934.

000 GENERAL

920 GENERAL WEATHER CONDITIONS

Very dry and warm conditions have prevailed throughout May generally in the Southwest. Only two monuments, Chaco and Capulin, report moisture enough to insure adequate range and forage. Dust has proved a nusiance at Bandelier and Gran Quivira, but is less prevalent than usual in north eastern New Mexico in the neighborhood of Capulin Mountain.

100 ADMINISTRATION

121 MONUMENT INSPECTIONS BY SUPERINTENDENT PINKLEY

Tumacacori: With Chief Engineering Aide Tovrea May 18 concerning architectural matters. See Supplement, page 376.

122 MONUMENT INSPECTIONS BY SPECIAL FIELD REPRESENTATIVES

H. E. Bailey, botanist from Berkeley, Calif., offices: At Montezuma Castle two days making collections.
A. E. Borell, regional wildlife technician: at Gran Quivira May 6; at Chaco Canyon May 14, et seq, on rodent control. See page 351.
J. H. Diehl, park engineer: at Chiricahua May 2; at Gran Quivira May 20; at White Sands May 21. See page 366.
J. B. Hamilton, associate engineer: At Headquarters, Wupatki, Walnut Canyon, Aztec Ruins, Chaco, and Montezuma Castle. See page 367.
A. C. Kuehl, resident landscape architect: At Chiricahua April 29; at Tumacacori, April 30.
Harry Langley, resident landscape architect: Walnut Canyon, Hqrs.
Chas. Richey: resident landscape architect: Walnut Canyon, Hqrs.
J. H. Tovrea: Tumacacori, Walnut Canyon, Wupatki, chief engineering aide.
V. W. Vandiver, regional geologist: Walnut Canyon

150 NEW EQUIPMENT

Chaco Canyon: New 1½-ton dump truck arrived May 15, and was immediately put to work hauling water, maintaining fence, etc., see 352.

180 CIRCULARS PUBLICITY

Headquarters: Prepared 100 Southwestern Monuments Special Reports No. 4, "The Tumacacori Choir Loft Problem," by Frank Pinkley and J. H. Tovrea; also 250 SWM Special Report No. 5, "Geological Report on White Sands National Monument," by Vincent W. Vandiver, regional geologist.
Wupatki: Southwest Tourist News carried small article on Wupatki, taken from informational leaflet which is distributed at that monument.

200 MAINTENANCE, IMPROVEMENTS, NEW CONSTRUCTION

210 MAINTENANCE, UNUSUAL

Aztec Ruins: Museum trim painted green. See page 349.
Casa Grande: Much time still being wasted maintaining make-shift sewer system which is a possible menace to health. See page 341.
Tumacacori: Three buttresses constructed to brace wall of old building now being used as office. Also house painting and cleaning. See page 331.

220 IMPROVEMENTS

Wupatki: Trail work progressing satisfactorily. Back dirt being used to construct a ramp which eliminates dangerous steps and to save prehistoric wall. See page 344.

230 NEW CONSTRUCTION

Bandelier ECW (See page 354).
Quarters No. 1 completed and ready for occupancy. Some landscaping yet to be finished.
Quarters No. 2 Masonry at door and window height. Timber crew has delivered 100 logs from Santa Fe National Forest which will be shaped for vigas and lintels for Quarters No. 2 and Residence Area Equipment Shed.
Construction of Park Refuse Burner started on north mesa near Canyon rim. Base poured and forms in place.
Flagstone floor material quarried and delivered to Museum Building.
All wall, ceiling, roof, and portal construction complete on Museum. With completion of floors, building will be ready for cases.
Small amount of maintenance on Rio Grande trail.
Planting of small shrubs along entrance highway and around Headquarters area continued.
Usual rock quarry project continued through month.
Canyon de Chelly (See page 346).
Water line complete from well to reservoir and from reservoir to within 20 feet of house. Pumping started and water found to be slightly cloudy but of good taste and quite soft. Remaining line and sewer connections will be ready in two days.
Chiricahua ECW (See page 338)
1500 feet completed on Echo Trail, making total of 7,500 feet. Will reach Echo Point June 1.
All material on ground for Headquarters-Portal telephone line. Eight and three quarters miles of poles set, and all will be in place by first week in June.
Excavations for Utility Buildings 90% complete but were delayed by large amount of blasting necessary.
Topographical survey project continued. Is within about two months of completion.

230 NEW CONSTRUCTION (CONT.)

Gran Quivira: Pumping plant and new pump house completed. See pp 333.
Pipe Spring ECW (See page 335).
Eight-man gang re-started road work May 21. Grading, gravelling to be done first.
New grade laid out.
CCC swimming pool finished.

300 ACTIVITIES OF OTHER AGENCIES IN MONUMENTS

320 COOPERATING GOVERNMENT AGENCIES

Chaco Canyon: Soil Conservation Service work progressing satisfactoril Have built new earth dikes near proposed headquarters area, revetment around Pueblos de Arroyo and Kin Kletsoi. 2,000 Parasela shrubs were planted for bank protection. See page 351.

320 AGENCIES OTHER THAN GOVERNMENT

Chaco Canyon: University of New Mexico pushing their Headquarters Building to completion by June 15. See page 352.
Wupatki: Coconino County Highway Department very kindly loaned truck on three occasions. See page 344.

350 DONATIONS AND ACCESSIONS

Pipe Spring: Mrs. Maggie Heaton of Moccasin, Arizona, donated a combined "bullet mold -capper, and loader." Promises Indian pottery when monument has a safe place to keep it. See page 335.

400 FLORA, FAUNA, NATURAL PHENOMENA

400 ETHNOLOGY

Wupatki: Exhibit hogan and "shade" for Navajo exhibit June 6 and 7 finished by Navajos. Photographs and notes at different stages of construction were acquired by monument. Exhibit promises to be worth while. See page 345.

420 MUSEUM SERVICE

Aztec Ruins: Custodian Faris and Ranger-Archeologist Hart each prepar layout plans for proposed addition to Museum. These plans will be co ordinated by Headquarters Naturalist staff and forwarded through re gular channels. See page 349.

460 BIRDS

General: Due to heat and arrival of nesting season, monument bird

460 BIRDS (CONT.)

banding stations were much curtailed in function. A total of 129 birds were banded, bringing the total for the fiscal year 1936 to 1,466. Pipe Spring turned in a good record concerning banding of migrating Gambel Sparrows, which gives hope of obtaining future returns for this species. Tumacacori added three interesting species to the banded list: Vermillion Flycatcher, Baird Bewick Wren, and Verdin. See page 410.

Gran Quivira: Large flocks of birds; Custodian claims they drink six gallons of water in four hours. See page 332.

Navajo: See page 337 for April bird list.

Wupatki: See page 344 for May bird observations.

470 ANIMALS

Wupatki: Three antelope seen on two occasions. Rattlesnake specimen obtained; harmless snakes occasionally discourage visitor travel on trails. See page 345.

500 USE OF MONUMENT FACILITIES BY PUBLIC see page 325)

530 NEWSWORTHY VISITORS

Aztec Ruins: Earl Morris, noted archeologist.

Bandelier: J.E.Kell, state parks division; J.J.McIntee, assistant ECW director; J.A.Chase, commander Albuquerque CCC district; Frank C.W. Pooler, regional district forester; C. C. Balcomb, F.H.Flint, Harley J. Helm, J.C.Campbell, Q.B.Sandberg, of Soil Conservation Service; Frank Andrews, Santa Fe National Forest Supervisor; R.A.Livingston, Shiloh National Military Park; Mrs. Lansing Bloom, wife of noted U. of New Mexico historian; Paul Kirkhart, superintendent of schools of Protection, Kansas.

Casa Grande: Roy Hopping, brother of Guy Hopping of General Grant National Park; Ranger Charles Hutchins of Carlsbad National Park.

Chaco Canyon: F. D. Matthews and Engineers Fife and Slattery of Soil Conservation Service; W.W.Postelthwaite, W.K.Drea, and Paul Boucher of Colorado College. Stanley J. Milford inspected University of New Mexico's building. State Highway Engineers Dwyer, Sumner, and Starky studied blow sand north of Escavada Wash. W.G.Proper and Jack Snow, Soil Conservation Service photographers; Lionel Palmer, superintendent of schools of San Juan County.

Tonto: Jugo-Slavian war minister; Mrs. Jack Whitehead of Southwestern Arboretum and brother, Phillip Thomas; Ruth and Millard Henning.

Tumacacori: Mr. Underwood of Underwood and Underwood; Mr. and Mrs. H.J.Henning of San Francisco; Mr. and Mrs. H.T.Getty and Dorothy Greiner of University of Arizona faculty. Dr. John H. Provinse of University of Arizona Department of Anthropology.

White Sands: Lyman Cooley, lecturer; Lawrence Brundell, petroleum geologist from Australia; Wm. B. Mitchell, reclamation bureau; Col.

530 NEWSWORTHY VISITORS, White Sands (Cont.)

Porterfield, Silver City, N. M.; J.C.O'Leary, Silver City, N. M. Wupatki: Dr. and Mrs. A.E.Douglass, Dr. Waldo Glock, Harry Getty, Mr. Schulman, all dendro-chronologists; Dean Cummings and Gordon Baldwin of University of Arizona; Dr. Harold S. Colton, Miss Katharine Bartlett and L.F.Brady of Museum of Northern Arizona; R.A.Livingston of Shiloh National Military Park.

600 PROTECTION

620 FIRE PROTECTION

Bandelier: Snag fire May 20; location, north rim of Alamo Canyon in Section 21; Foreman and crew of 10 cut down burning snag, built 135 feet of fire line. Subsequent patrol proved suppression work effective. See page 356.

640 DESTRUCTION OF PREDATORY ANIMALS

Chaco Canyon: Soil Conservation Service controlling rodents around dikes. A. E. Borell, regional park service wildlife technician, in charge. Using Karbo Killer and carbon bisulphide gas. See page 351.

900 MISCELLANEOUS

MAIL COUNT

Incoming:		
Government	1,316	
Personal	785	
Total incoming		2,109
Outgoing:		
Government only	1,762	1,762
Telegrams:		
Outgoing	32	
Incoming	54	
Total telegrams		86
Grand Total		3,957

Cordially,

Frank Pinkley

Frank Pinkley,
Superintendent.

REPORTS FROM MEN IN THE FIELD

TUMACACORI

By Louis R. Caywood, Custodian

Due to the change in time of sending in the Monthly Report our visitor record is lower than it normally would be - at least according to registration for the same month last year. Five hundred and sixty visitors were shown through the Mission on guided trips, and 145 used the facilities offered by the monument, making a total of 705.

The weather is quite hot, the afternoons lately have been cloudy and sultry. For the last two days we have had rain around us, but so far it hasn't paid us a personal visit. We have had enough wind thrown in to keep our tank filled, which is very much appreciated.

Noteworthy visitors for the month include Mr. Underwood of Underwood and Underwood the beginning of May. Mr. and Mrs. M. J. Henning of San Francisco, Southwestern Monuments enthusiasts, spent the 6th and the 8th at the Mission. We certainly enjoyed their visit and hope to have them with us again soon. They plan to visit all the Southwestern Monuments this trip, so I am sure they will be more enthusiastic than ever about our monuments when they have seen them all. On May 9, Mr. and Mrs. H. T. Getty and Miss Dorothy Greiner of the University of Arizona faculty and staff were overnite visitors. Dr. and Mrs. John H. Provinse of the University faculty visited the Mission on the 10th.

Park Service visitors were Mr. A. C. Kuehl, San Francisco, on April 30. Al said he liked the Mission and saw possibilities for architectural study. We hope he pays us another visit soon and plan our proposed Museum Building. May 18 the Boss and Tov had another "architectural bull session" here at the Mission. Martin and I learned some new architectural terms and some very fine points about the Mission. We are looking forward to another visit from the MAE (Mission Architectural Experts) next month.

House repairs and painting were done on the 4th and 5th.

Three buttresses of adobe were built against the leaning wall of the building adjoining the Mission which I have converted into an office. This was done in hope there will be an end to the tendency for a fallen wall rather than just a leaning wall. The use of buttresses and heavy piers in mission architecture seems to have been common. Wherever extra strength was needed or where a strain developed either buttresses or piers were built. Three very fine buttresses were added to San Ignacio de Caborca because of strains developing after the walls were completed.

Speaking of other missions - Winnie and I took two accumulated days off to see some of the closer missions in Mexico. After getting the necessary permits we traveled by automobile to Hermosillo one day, returning the next after seeing all the missions and churches along the way. San Ignacio, one of the Kino Missions, was the most interesting that we visited and several hours were spent taking pictures and visiting with the caretaker of the Mission.

Bird banding activities for the month were not very heavy. Seventeen new bands were used in banding the following:

Baird Bewick Wren	3
Vermilion Flycatcher	2
House Finch	2
Western Mockingbird	5
Western Horned Owl	2
Cactus Wren	2
Verdin	1
Total	17

Several new varieties will be noted in the above list.

****

GRAN QUIVIRA

By George L. Boundey, Custodian

Visitors for the month totalled 575.

The county singing societies held one of their yearly meetings at Gran Quivira and we had 355 visitors on May 10.

Our visitors are all very much interested as the roads are bad and they have made long dusty drives to reach us.

They tell us up here we are having our summer weather but woolen blankets are just as necessary now as they were in the winter time at Tumacacori.

We have had much high winds and dust during the month with scarcely any rain.

We have set up three sewer pipes with water containers on the top so that the birds may drink. I measured the water in one container and the birds drank six gallons in four hours. They come in great flocks and many are making nests in the vicinity.

They tell us up here that after the July rains both birds and

flowers are at their best, but we are noticing new blossoms nearly every day and if the land scapers acquiesce we mean to have a flower garden with only native blossoms.

Mr. Gipe has the pumping plant and pump house completed and will be leaving in a few days for Canyon de Chelly. We are going to miss Mr. and Mrs. Gipe very very much.

Mr. and Mrs. Borell paid us a visit on the 6th. It was their first visit to this monument, and they were much interested in our rattlesnake neighbors, but not one did we find for their collection. They had not been gone but a short time when one member of a party killed by far the largest rattler I had seen so far.

Mr. Diehl stopped here on the 20th and inspected the pumping plant.

Have been trying for a long time to get visitors to park at the parking ground instead of driving up into the ruins; signs did little good, so I put up a flag pole in the parking place and am having no more trouble; the minute they see old glory they just naturally swing about and stop.

Mr. Smith, recently retired as custodian here, is making a trip back to his old home in Arkansas. He had me make for him a map of Gran Quivira drawn according to scale and will give some talks on Gran Quivira to his friends in the south. We made the drawing on cloth 4 by 6 feet.

****

TONTO

By Woodrow Spires, In Charge

With this report I bring to a close one of the most interesting months which I have thus far encountered at Tonto. The visitor count was much lower than expected but to offset this they have been of unusually high quality. The only way I can account for this sharp decline is the leaving of the winter visitors for the East.

Excepting a slight snow storm on the Sierra Anchas May 6, we have enjoyed a typical Arizona spring month.

The following figures are derived from SWM Stencil No. 16:

Total visitors at the Monument	365
Total time guiding	4320 minutes
Total visitors taking field or ruins trip	179
Total time field or ruins trips	3295
Total number of field or ruins trips	49
Average time field or ruins trips	67 minutes
Average group field or ruins trip	3.6

Total visitors museum trips	205
Total museum trips	61
Total time museum trips	1025 Minutes
Average time museum trips	16.8 "
Average group museum trip	3.3

Trips to the upper ruin were so few that they were included in the regular field or ruins trip.

The following newsworthy visitors have registered during the month:

May 1, War Minister of Jugoslavia and party.

May 1, Mrs. Jack Whitehead of the Arboretum and brother Philip Thomas.

May 3, Mrs. Hugh Miller and party from Coolidge had a (enjoyable?) picnic sharing the shade tree with two other groups of picnickers.

May 9, Ruth and Millard Henning arrived at the Monument, leaving May 13.

May 23, Ruth and Millard Henning paid a return visit on their way to Las Cruces.

Tonto solved one problem for the Hennings. They wondered if the rangers spent all their spare time thinking up the so-called dumb questions which are reported, but during their stay two elderly women came to the cabin, walked into the kitchen, and looked around, and in all sincerity asked "Is this the cliff dwelling?"

Tomorrow I expect to get started bracing the walls in the Lower Ruin which apparently is going to be rather a tedious job.

General cleanup work has occupied most of my spare time.

****

PIPE SPRING

By Leonard Heaton, Acting Custodian

Received the May Broadcast yesterday. The first things I look for are the instructions, requests and orders that you give to us in the field to help make our outfit the best in the Service. Accordingly, here is my report on the 22nd, instead of the 24th, as I have been in the habit of sending it out.

Visitors this month have fallen off some from that of April. Those who have come have been very interested in the place and expressed themselves as wanting to come and see the Fort when it is completed as to

restoration of the pioneer relics, and furniture.

Travel figures were as follows:

May guided trips:	16	Present	81,	Local	275,	Lecture CCC	36
April " "	20	"	96,	"	530	" none	
Decrease	4		15		255	Increase	36

Total for May 392 April 626

Have had another relic donated to the monument by Mrs. Maggie Heaton, Moccasin, Arizona. It is a combined bullet mold, copper and loader. It is so rusty that I have not been able to determine the make or size. Mrs. Heaton promised to give us some Indian pottery when we have some place to keep it.

On the 24th of April a CCC boy turned in a cartridge of unusual make; it was found in the bottom of the pool in the meadow when it was being cleaned out for swimming. The measurements of the cartridge are as follows: Length over all, 1-5/8 inches; Shell, 1-3/16 inches; Head across, 5/16 inch; center fire; and is marked W.R.A. Co. 22, W.C.F.

(Ed Note: Send it to Headquarters; our gun expert, Jack Winter, will identify it.)

With the collection of all the small relics I have (and I am not displaying very many of them) I am wondering if I could not get some show cases in which to put these articles.

Yesterday a crew of eight men started to work on the monument projects. Have started them on the west end of the road through the monument, and intend to finish up the road work first getting all grading and graveling done as soon as we can. Then will work on the other projects if we have funds to purchase material.

Tried to get an engineer in last week but couldn't; consequently, I called the Boss and asked him to send one in, but he wanted to know if I could not line the road up and give it a grade with my eye. I told him surely. He said "Go ahead and I will back you up on it." I got my tape and pegs and went to work with the help of a CCC boy. Think the road will be about where Mr. Cowell surveyed it in 1934 as I found four of the stakes he put in. At any rate, you will not be able to tell if the road is out an inch or two when traveling over it in a car.

The CCC boys finished their swimming pool May 20 and turned in the water that night, but it is not filling up as fast as they thought it would. It will take at least four and maybe five days to fill. There is a dance planned tonight to celebrate the filling of the pond; also some swimming was planned, but that is out.

The bird banding has been very interesting this month. In trapping the Gambel Sparrows I have noticed that they only stay here about five days and then move on, as some days I would catch 10 or more and the next few days most of my catches would be repeats; then a new bunch would come in and very few of the first bunch would be among my catches.

There have been very few catches the last few days. There are many tree birds here, and I would like to get some of the two-compartment traps to use if there are any to be had.

The birds banded for May are:

Gambel Sparrow.....	55	Repeats	46
Green Tailed Towhee	2		
Long Tailed Chat	2		

Total for May 59; April 44; Grand total 103.

I haven't done anything with the lizards this month. I have been working on some traps to catch them in. Will let you know the types of traps used after I have tried them out and the success I have with them.

The weather has been very windy and dry. It has been cloudy but have had no storms. The plant life is beginning to show the lack of moisture, and the stock watering holes are getting very low. In some places the stock are being driven to other places for water.

Thanks for the botany blotters, but I think I shall not need them a great deal this summer, as there are very few flowers coming out, and those are of the perennial kind as the seeded ones did not get enough moisture to keep them growing. Those that I have collected are few and the specimens are not of the best.

I was oing to say this is about all when I happened to think that I am now wearing one of the regulation Park Service Belts. When my wife saw it she said it must belong to the "Pink Pants" class. The buckle is okay, solid brass, with gun blue finish, but the GREEN, I don't think it fits at all.

****

NAVAJO

By John Wetherill, Custodian

I am enclosing report for April and also birds banded by milton. We have had some very bad weather the last month, which has limited the travel to just a few of the most adventurous. We are in hopes that we can give you a better report this month.

Mrs. Wetherill and I are out here in Berkeley "dodging cars and people" the most of the time. We may get over our fear of them in the

course of time. The desert for me is like the Texan that went to Utah. Everything in Texas was bigger and better than anything in Utah. A bunch of the boys thought they would teach him not to brag so they put a turtle in his bed. When he went to bed that night he found it. They told him it was a Utah bed bug. After sizing it up, he said, "Huh! it must be a young one." Even the noise on the desert is bigger and better than it is here.

--

By Milton Wetherill, In Charge

Enclosing report No. 16, birds seen and noted also birds banded to date.

The first part of April quiet, probably due to the windy weather, that we had at that time. The middle of the month fair, while the last few days have been partly cloudy and windy.

Have collected a few insects and plants, but they seem to be slow coming. The insects are not as plentiful as last year. Flowers are just starting to bloom. The Aspen and Birch are in leaf, with the oaks starting to swell buds.

The hill coming this way out of Shanto has been cut down about 15 feet, which will make it easier coming this way.

April bird list is as follows:

Audubon Warbler
Western Wood Phoebe
Western Gnatcatcher
Woodhouse Jay
Red-shafted Flicker
Red-nape Sapsucker ?
Canyon Wren
Gray-headed Junco
Junco oreganus ?
Tit-mouse
Mountain Chickadee
Broad-tailed Hummingbird
Sharp-shinned Hawk
Raven
Western Tanager
Black-throated Gray Warbler
Mourning Dove
Bush-tit
Robin
Pinyon Jay
White-breasted Woodpecker
White-breasted Nuthatch
White-throated Swift
Shufeldt Junco
Spurred Towhee
Say Phoebe
Ruby-crowned Kinglet
Red-tailed Hawk
Turkey Vulture
Arkansas Kingbird
Western Warbling Vireo

****

CHIRICAHUA

By Wm. Stevenson

I herewith submit the following travel report for the month of May.

During the month 462 visitors arrived in 102 cars. Seventeen states and Mexico were represented.

Many visitors are now stopping at the Ranger's residence to express their appreciation of the camp ground, bathouse, and our trail system.

Echo Trail is "selling" all the visitors who can be persuaded to take the walk.

****

CHIRICAHUA E.C.W.

By Wm. Stevenson, Project Sup't.

I herewith submit the following ECW report for April:

Work has progressed well on Echo Trail this month. 1,500 feet were completed during the month, and the crew will be working on Echo Point June 1. Total trail now complete on Echo is 7,500 feet.

All materials are now on the ground for the Headquarters-Portal telephone line. Eight and three quarters miles of poles have been set this month. All remaining poles will be set by the end of the first week in May.

Excavation for the buildings in the utility area is 90% complete. This project has gone slower than expected due to large quantities of rock which have had to be blasted.

Work has continued throughout the month on topographic survey.

Forty enrollees are due May 27, which will bring the company strength to 192.

Visitors for the month - Al Kuehl, landscape architect. April 29; Jack Diehl, park engineer, May 21.

****

WHITE SANDS

By Tom Charles, Custodian

The Lord still smiles on the Great White Sands.

It has been almost a year since our road crew started a campaign to get equipment to remove the sand which occasionally drifts across the road in about three places. When Chief Engineer Kittredge was here a few weeks ago, Ben Daugherty appealed to him for help. Ben knew he was

coming and had been praying for a windy day when the Chief was here. In my early days in Kansas I have seen wind storms take the four strands of a wire fence and wind them together into a solid rod; I have seen it blow fat hogs clear across the Republican River and lay them down gently on the other side; and I heard of a wind in a neighboring county that ran a crib full of ear corn out of a knot hole, shelling the corn as it went out. Leaving the grain on the inside and the cobs on the outside, so I am not a stranger to wind but I guess that Kansas never had much on the kind of a wind that Ben put on for Chief Kittredge the day he was here. Our whole force hopes that the demonstration was convincing and that it brings results.

I do not know where the story originated about a man catching a bear and not being able to turn him loose but I know just how the fellow felt, since I have gotten into this percentage business as applied to my travel count. When Barry Mohun came here six months ago, we started a count of visitors three days a week, eight hours a day. We took the percentage every way we could; the percentage that stopped along the road, that went into the monument, that went west or went east and the percentage each hour in the day. From the best of my recollection, Bob Rose put that percentage idea into our heads. It looked good and worked fine, but as time goes on the figures are a little staggering. I think they are correct and can see no reason to change them, but if this attendance keeps on climbing I am expecting a howl that I am "swelling the count."

From now on our attendance must be arrived at on percentages which we have established in the past six months count. For instance the count shows that the usual Sunday attendance compares to the week day attendance as 39 to 87; that is, every time we have one Sunday visitor we have had approximately 2-1/5 week day visitors. Our Sunday attendance for the past month has been: April 26 - 338; May 3 - 538; May 10 - 765; May 17 - 792; total Sunday attendance 2,433. Two and 1/5 times this Sunday count gives us 5,352 week day visitors. I am willing to cut that week day number in half, though some of the best informed say it is not too many. I give it to you as the result of established averages.

Here is our last month's attendance:

Sundays	2,433
Week Day visitors	5,352
Play Day	3,595
Special Parties	500
Total	11,880

The 500 listed as "Special Parties" is purely an estimate, but I know of over 20 school parties held at the Sands this month with an attendance of from 10 to 75 each. You may be interested in some of the schools and the distance which they are from the monument: Pedernal -

194 miles; Morarity - 210 miles; Ysleta - 110; Tatum - 201; Weed - 54; Eunice - 236; Anthony - 75; Las Cruces - 50; El Paso-100; Estancia - 195; Amarillo - 350; Loretta Academy - 100 miles. Amarillo sent 84 seniors who visited both the Carlsbad Caverns and the White Sands, but Eunice (and many of the others) brought their 16 young people the full 236 miles for White Sands Play day alone.

There have been very few nights during the last three weeks of school but that there was a party from some of the county or Las Cruces schools. These are among the 500 listed as Special Parties.

Speaking of parties, Boss, the one par excellent was the Annual Play Day. This is a party sponsored by the Alamogordo Chamber of Commerce, cooperating with approximately 100 teachers and in honor of 3,200 Otero County children. It was the second annual meeting and the response from every quarter and the unqualified success fixed it as an annual affair.

On account of the absence of shade at the picnic ground the committee on arrangements decided to hold the picnic as late in the day as possible and fixed the hours from 2 p.m. to 9 p.m. It is estimated that this late hour kept at least 500 children from the mountain districts away from the party. But what is 500 children, more or less, at a White Sands Play Day! There were plenty to stage four ball games, the track events, impromptu sports and the band concert, all at once and have a large crowd for each event. In the evening the Mescalero Indian Boy Scouts put on a camp fire dance at the foot of an exceptionally fine hill and hundreds of people sat in the soft, warm sand and cheered Charles Lindberg Shanta-Boy and his brother scounts to an echo for the fine dances which they gave. After the Indian dances the entire assembly gathered around the fire and sang such songs as Old Black Joe, America, Oh Fair New Mexico, and others. It was some party, no accidents, no drunks, no discord of any kind.

I know that you will pardon a brief reference to a subject which we have discussed before; the matter of shade. And before we go into it, I want to thank you for your recommendation to the Director to spend $2,000 for shade at the Picnic Ground. I am delighted that you are doing what you can to provide this necessity; for I must admit that it leaves a sting to think that 500 mountain children were deprived of the opportunity to meet with the other children of their class in the annual picnic, for want of a little shade. And even the pleasant picture of 3,000 children romping on the snow white hills cannot efface the shame of the other picture of mothers digging holes under the modern, low-slung cars, and crawling in with their little tots to get away from the excessive heat. It is a condition that calls for an apology and is not on "peak days" alone but every day in the summer season and especially every Sunday.

Among our interesting visitors was Lymon Cooley, movie-man of the well-known lectures, "Rediscovering America;" Laurence Brundell, Shell

Petroleum Geologist from Australia; Wm. B. Mitchell, Reclamation Department, Washington, D. C., with a picnic party of about 25 of the Reclamation officers and families from El Paso; Colonel Porterfield, retired capitalist, Silver City, and J. C. O'Leary, President of the Silver City Chamber of Commerce and editor of the Silver City Enterprise. Mr. O'Leary followed his visit to the Sands with a half column editorial on the beauties and attractions of the Sands and full description on how to make a visit there a Sunday outing.

Just as we go to press Jack Diehl slips in for his farewell visit. It's nice for Jack to get a promotion, but it will be hard for the White Sands force to get along without his friendly, instructive visits.

****

CASA GRANDE

By W. J. Winter, Custodian

Travel this month was 2,274. This included two large groups - a Texas state picnic of 300 people on April 26 and a Townsend Club picnic of 100 on May 17. April 26 we met Roy Hopping, brother of Guy Hopping, Superintendent of General Grant National Park. May 9 J. B. Hamilton, Engineer from Mesa Verde, came in. May 17 we greeted Ranger Charles Hutchins of Carlsbad Caverns. All other NPS visitors were for Headquarters only.

The weather has been a bit warm, the day temperatures running from 88 on the 8th to 107 on the 14th, and the night temperatures from 44 on the 8th to 68 on the 15th. Precipitation was zero.

The Monument is now entirely minus the services of Charlie Steen. So now Don Carlos is the Juniorest of the Junior Naturalists. We are glad of his promotion, though we hate to lose him.

Taking Charlie's place as Ranger is Don Erskine, who has been in charge at Walnut Canyon for several months. Don is accompanied by his charming wife, Marie, and they make a welcome addition to the Monument family. H.R.W.P. Marie had one of the worst introductions to Southwestern Monuments that I have seen, as she arrived at Walnut Canyon in snow, ice and mud, and then when the weather got warm they were shifted down here to the summer furnace. Other difficulties beside the weather were involved, such as quarters, so if the gal survives it all she rates a medal.

To ease the heat situation Don has had a home-made cooling system installed (at no expense to the government) at his house. It is a window set-up which involves drawing air through dripping water and blowing it into the room with a fan. These coolers became very popular throughout sourthern Arizona last year. The rest of us have looked it over with much interest, as it certainly cools off the place, and that will be something to think about when the thermometer hits 115. We are wondering if the

thing might not throw an excessive amount of moisture into the air, or if the natural air here is not dry enough that it could stand a little added moisture. Don't be surprised if more of these coolers are installed. Now, if someone would only think up a heating device equally simple and inexpensive, for the winter nights, there might be less cursing of the BOPADS.

As I write this I can hear our gasoline sewer pump running. It now takes over half an hour of Don's time or mine twice a day to pump the surplus water from the hole beside the septic tank. Over 30 hours a month plus time and expesne of servicing and repairing the motor and pump is an expenditure that should not be necessary. This and the reasons of sanitation mentioned in previous reports make us fervently hope that the powers that be will soon crack loose with funds for an adequate sewer system.

To get on a more pleasant subject, it was noticed that the say-phoebe in the east room of the Casa Grande hatched their second family of the season May 23. The three young owls in the same building are grown almost as big as the two old ones. The second rattlesnake of the season was seen last night in my back yard behind the garage. Three Gila Monsters have been noticed, one on the entrance road, one at the wood pile and one on the path to the ruins. These may have all been the same one, the Natural list Division not having banded any of them yet so they can be told apart. A ground squirrel caused some amusement by his persistent be-deviling of a bull snake, nipping at the latter's tail until he took refuge in a hole. Not a bad idea on the part of the snake and one which we might adopt next winter when the visitors get too thick.

****

WUPATKI

By James W. Brewer, In Charge

500 Use of Monument Facilities by Public

91 guests registered at Wupatki Pueblo; 106 at the Citadel Group; 31 names are duplicated, leaving a total of 166 registered visitors to this Monument in May, 1936; 1935, 125; 1934, 9.

Two parties of overnight campers found only an absence of Monument facilities for the public.

States were represented as follows: Arizona, 47; California, 32; Colorado, 16; New Mexico, 10; Michigan, 7; New York and Washington, 6; Minnesota, 5; Tennessee and Texas, 3; Illinois, Nevada, Iowa, 2 each; Massachusetts, Connecticutt, Ohio, Mississippi, Oregon, Arkansas, 1 each. (SWM Stencil 16 attached) The above figures were taken on the 22nd.

530 Newsworthy Visitors

On Tuesday, the 28th, Dr. A. E. Douglass with Mrs. Douglass, Dr. Waldo Glock, Harry Getty, Mr. Hale, and Mr. Schulman were visitors. As you know, Dr. Douglass made a study of Wupatki beams, and is at present interested in obtaining student material from here. Dr. Douglass and I climbed into the cavate rooms where the catalogued beams were stored and picked them over. Dr. Douglass selected a number of specimens, some of which he remembered as old friends.

On Wednesday the 29th Dr. Byron Cummings and Gordon Baldwin brought two students to the Pueblo. They stayed long enough to see the Pueblo thoroughly, the amphitheatre, ball court, pit house, and petroglyphs. All of which requires time few visitors can or will afford. I had a very pleasant afternoon.

Dr. Colton and Miss Katharine Bartlett escorted a party of A.A.A.S. meeters from the Grand Canyon to the Citadel on the 30th. As previously arranged, I met the caravan at the Citadel; here some turned back and three cars came on to Wupatki Pueblo. Because the cinder road from Wupatki to Sunset Crater was, and still is, so dry I advised against that proposed itinerary. I know some of the party were disappointed, but was afraid that someone's car might crowd up and delay the procession.

On May 1 Mr. L. F. Brady, Curator of Geology Museum of Northern Arizona, brought another caravan of A.A.A.S. I met this party at the Citadel also, and guided them through both units of Wupatki.

Mr. Brady returned with Mrs. Brady and their guest on the 6th.

100 Administration

123 Visits by NPS Officials

Mr. J. B. Hamilton of Mesa Verde National Park registered at the Citadel on the 12th, and to our regret did not come to the Pueblo.

I've been wondering ever since J. H. Tovrea's visit if our amphitheatre is an unfinished kiva.

Mr. and Mrs. R. A. Livingston of Shiloh National Military Park visited the Pueblo on the 22nd.

020 Weather

April 25th to May 1: high 90 degrees, on the 25th; low 41 degrees, on the 30th; precipitation, trace on the 26th; five cloudy days and one sunny day.

May 1 through 22nd: High 89 degrees, on the 13th and 15th; low 36 degrees, on the 7th; precipitation, traces on the 7th and 19th; two cloudy days and 20 sunny days.

We have not had a measurable rainfall since March 25. Fifteen consecutive sunny days from the 8th to the 22nd have retarded range conditions greatly. The cinders are hot, dry, and loose and their effect on the sheep's feet is pitiful.

180 Publicity

Southwest Tourist News, May 12, contains a brief article on Wupatki obviously taken from our mimeographed circular.

210 Maintenance, Improvements, New Construction

230 New Construction

We are using the back dirt from HNA-excavated rooms to form a ramp. This change will eliminate the narrow hazardous CWA stepway and stop destruction of the prehistoric retaining wall, at the same time reducing the pile of back dirt.

300 Activities of Other Agencies in Monuments

320 Cooperating Agencies Other Than Government

On three occassions I borrowed a 1½-ton truck from the Coconino County Highway Department. These hauls were for hogan and shade material

On one trip we towed the Pueblo I pickup into Flagstaff, for repairs. Being Sunday (the only day the County truck is available to me) we did not leave the Pueblo until six p.m. We hurried along because the truck had no lights mounted on it; dusk overtook us at Camp Townsend, and we went in for a Coca Cola (Atlanta, Georgia, papers please copy). We were drinking and discussing our predicament when Mr. Townsend suggested calling the sheriff's office and getting a deputy to come out and pilot us in - which he did!

400 Birds

Very casual bird notes show that Townsend Solitaire has not been seen on the Monument since the 13th, at which time I saw two at the pipe line. Both were gasping like mother's canary used to in July. Other birds observed are: Poorwill; Desert Black-throat Sparrow; Rock Wren, (the Wrens and Sparrows are common about the Pueblo now, singing and chirping from the walls and nearby bushes) House Finch; Horned Lark; Pinyon Jay; Say Phoebe; Dove; White-rumped Shrike; Cowbird; Eagles are seen much less often than during April.

470 Animals

Three head of Antelope were seen between Wupatki and Sunset Crater on the 17th; one, on the slope of the Crater the 22nd.

On the 18th I started down the ladder early in the morning only to be halted halfway by the dry rattle of a side-winder. I climbed up and put a shot shell into the .22 and then on into the snake. Later I learned that at Walnut Canyon a live snake cage awaits me. The fine shot did not seriously damage the snake as a specimen and it is in alcohol now.

I have no personal objection to snakes, but feel that where visitors of all kinds are welcome, snakes of all kinds are not. A large non-poisonous snake recently met some visitors on the trail, after which the visitors' interest in the Pueblo seemed slightly dampened; we thought we might have to be firm with the snake about the use of trails, but he hasn't been seen since - probably none too pleased with the encounter himself.

Navajo Arts and Crafts Exhibit

Since the advanced date has been put on the Report we think it is possible that some readers may be in possession prior to the 6th and 7th. So we again extend a "come one, come all" invitation.

The hogan was finished yesterday and here are some figures: Height - 14 feet; Diameter - 18 feet (The Indians say it is the best hogan between Cameron and Leupp). 140 to 150 tree trunks were used in the frame work. 202.5 cubic feet of dirt were used in the mud covering. 445 gallons of water were required to make the mud and harden the floor. 457 red man hours were required to haul, peel, and erect the logs, mix and apply the mud. Clyde Peshlacai and Albert Cody were the longest contributors.

One brush type "shade" is partly constructed and all the timbers are on the roadside awaiting the truck tomorrow.

The shearing slowed things up a couple of days, and if insufficient time remains to build a sweat house it can be one of next year's "added attractions."

I have kept a pictorial step-by-step record of the hogan construction as well as "Some Notes on How to Build a Hogan," which I will forward to you, hoping you'll never want to build one.

The top soil is so loose and thin it is necessary to blast a hole for each verticale post used in the shelters. Other exhibits are coming in rapidly and together with the borrowed antiques will make an exhibition.

SUNSET CRATER

By James W. Brewer, In Charge

Two hundred eighty-three visitors registered at Sunset Crater National Monument this month; 1935, 248; 1934, no record.

States represented were: Arizona, 76; California, 47; Colorado, 16; Texas, 7; Michigan, 5; Missouri, Ohio, New York, New Mexico, Pennsylvania, 4; Indiana and Oregon, 3; Oklahoma, Minnesota, 2 each; Kansas, Montana, Washington, Rhode Island, Massachusetts, Wisconsin, Kentucky, Tennessee, and Illinois, 1 each.

From Sweden came two parties of visitors.

****

CANYON DE CHELLY

By Robert R. Budlong, Custodian

Have just received the last copy of the "Broadcast" and note that reports must be in to Headquarters two days earlier than usual. Since the mail leaves in less than three-quarters of an hour, I must attempt to write a report in that time. I'm afraid it will be greatly condensed.

There were 158 visitors to this National Monument during the month of May, 1936. During the month of May, 1935, we had twenty-three visitors. This month our visitors totalled 29 parties; total time, 98½ hours; average time per group, 2.4 hours. There were 14 rim trips, 6 trail trips 3 horseback trips within the canyons, and 7 trips within the canyons by car.

The canyons were passable for cars equipped with ordinary tires for only a week. Now warm weather and high winds have caused the wet sand to dry and form drifts, and only wide-tired cars may make the trip until we get more rain.

On May 11 we started completing the water line to the Custodian's Residence. At this writing the pipe line is laid from the well to the reservoir, the line completed from reservoir to a point 20 feet from the residence. One more day's work will complete all connections from well to house. We dug up 168 feet of pipe laid last year, and laid it to the new well. Last night we started pumping, using a light pump jack and 3 h.p. motor, and secured a fine flow of water. While it is slightly cloudy, not having been pumped for four months, it is of a good taste, and seems quite soft. Sewer connections will also be completed within two days.

We were greatly pleased to have Norman Jackson of Montezuma Castle make us a return visit this month. We took him into the canyons on horseback, and showed him a small part of a real National Monument. Our horseback trips here average about seven hours each; some go as high as ten

hours. We are thinking of carrying alarm clocks, so that when eight hours have elapsed the alarm will go off, and we can get off the horses and walk home. While we don't mind the long trips, we understand that some folks believe in eight-hour days, with a day a week off duty.

Nearly mail time. But I am reminded of real consideration on the part of two of our latest visitors: They were driving to the office when they noticed a large gopher snake lying across the road. The brakes were applied just in time to keep from running over the snake. Whereupon said snake crawled up under the hood of the car, around the engine, and our very considerate visitors spent the better part of half an hour trying to unwind the snake from the engine, insisting they didn't want it to get hurt, burned, or otherwise damaged. This is a real move in the direction of conservation of wildlife. We are justly proud of both our Monument and our visitors. Both are "the finest in the Southwest."

****

WALNUT CANYON

By Paul Beaubien, Ranger-In-Charge

648 visitors registered this month, and 506 are listed as educational contacts. Park Service visitors were J. H. Tovrea, Mr. and Mrs. J. B. Hamilton, Harry Langley, Charles A. Richey, Mr. and Mrs. J. W. Brewer, Charles Steen, and Vincent Vandiver.

Mr. Vandiver has filled a long felt want as he has completed a summary of the geological aspects of Walnut Canyon.

The last snow fell the evening of May 6, but it disappeared quickly. This has been a dry spring and the Forest Service expects one of the worst first seasons in history.

Since the snow, there have been 26 overnight camping parties; with as many as four parties on three different occasions. With heavier traffic, warmer weather, and a water supply, a large camp ground would be needed here.

The County has recently graded the two approach roads to the monument besides doing some improvement work on the spur road to the cliff dwellings. The Forest Service has hauled one tank of water to the cistern, and seems willing to haul another if necessary.

A large pine fell across the phone line several weeks ago. Somebody removed about 150 feet of wire at the break and this has not been replaced to date. The Forest Service will send fire fighters out by truck should a fire start, so I'm not greatly concerned about not having phone connections with the fire "lookout."

Don Erskine left for Headquarters May 6. Probably he can add some

to this report as he contacted a large group from the A.A.A.S. meeting in Flagstaff besides having first-hand knowledge of a fatality at the railroad crossing.

****

AZTEC RUINS

By Johnwill Faris, Custodian

All right, Boss, just to prove to you that we read the "Broadcast," we are submitting our monthly report two days early. February, March, April, and now May, all show decided increases over the same months last year, and May, like April, has been the best of corresponding months since 1930. Just as soon now as Dale gets our temporary museum in operation, we will start singing, "Happy Days are here Again."

Visitors for the month total 1,172.

May has been an exceedingly interesting month. We have had more fun trying to take care of all the planting put in by the CCC, obtain views for the Ecology case in our temporary museum set-up, actually drawing up plans for this arrangement, and putting our story across, than you can possibly imagine.

We started out the month with a bang, by showing 104 CCC boys from a Forest Camp at Dolores. They had wired us they would be here, so we were all ready for them, even to having an extra guide on the grounds that morning.

I have always contended, Boss, that there was not a reaon in the world for enlarging our Monument, but I am about to take that remark back. If our crowds continue to increase as they have of late, I am afraid that I am going to have to try and impose on my good friend in De Chelly and see if he will not lend me some area. If he will give me those sections containing Mummy Cave and possibly the White House itself, I might tack them on to the lower end of my Monument where not too many people will notice them, and thereby not detract from our reputation too much. It will have to be pretty high standard to even consider annexing, but I know that Bud would like to have some people see them, so I will let down the bars for his special benefit.

Following close on the heels of the CCC boys Jim and Mrs. Hamilton were in on their way to Coolidge. We are going to have to get busy on our parking area pretty soon or Jim will desert us entirely. And by the the way, Boss, all jokes aside, if we put off action on the parking area much longer, we might as well include plans for enlarging it. Right now on peak loads it bulges the cement wall around the area. The nice gateway on the east wall that leads into our picnic area, was just foresight on the part of Chuck Richey and will actually act as an entrance to our supplemental parking space which will be about twice the size of our present one. Thus, we will have the esthetic value of a very compact and

adequate area, while in actuality we will have a very picturesque overflow into an equally pretty setting. I tell you, you fellows down there do not really give Chuck the credit that is due him. I know that Jim has wondered all the time what the idea of that large opening was in the East wall, but I never did tell him.

We were very happy to have Earl Morris with us for a few minutes the early part of the month. He was kind enough to go over several of the cases and offer suggestions which we appreciated very much.

James F. Zimmerman, President of the State University, sent word that he would be in and see us on the 14th, but was delayed and did not get to stop with us. We regret missing his visit very much, and hope that he will get up this way again soon. He is in charge of this big celebration New Mexico is giving in 1940 honoring Coronado, and already his efforts are beginning to show fruit. I want to ask at this time for another ranger by 1940, and please, Boss, see that the addition is given our parking area and museum by then.

The regular Monument routine has been for the month normal. No trouble to speak of. The entire Administration Building has taken on a new appearance with its bright new coat of apple green paint on all the doors and windows. We try to do this every spring not only to improve the appearance of the building, but to protect the wood from the hot sun. Since we do not do it but once a year I think it deserves mention.

The blow that killed father this month was a letter from Dale King suggesting that we get out plans for a temporary museum set-up at Aztec. Bert and I all but tore out each others hair to fix up something for him, and are wondering now if he won't get busy and draw up a temporary plan for us. I think there is a limit to what even our educators can stand, and I bet Bert and I hit it with our plan. I dare say that he finds things in our plan that he never dreamed you would expect to find in a museum. Anyway, it was great sport and we enjoyed the faith he displayed in us a great deal. We are awaiting the action of our Educational Division in purchasing the cases needed for our displays, and in a short time now invite our colleagues to "C'mup and see us," and we will show them what our Coolidge and Berkeley fellows can really do when they start out to fix up a museum. We are becoming more proud of this Division every day.

One day was spent in taking pictures for the Ecology Case, and with the plan Dale wrote us about, we feel certain that this case will prove one of the most interesting at the Monument.

An official trip to Santa Fe, early in the month, constitutes the only trip out of this section. Bert Hart called on Budlong and Miller on his days off, and tells me they are fine. Gosh, Boss, I am almost scared to use those words, but anyway that was when he went so maybe I

can get by this time. Do not let Dale, Jack, or Martin see this part.

Well, this was interrupted by a party of 27, and if Aztec becomes any better known for an ideal picnic spot combined with a couple hours of mighty interesting ruins trip, I am going to need a spare ranger before 1940, and am going to be forced to make provisions for fireplaces in our picnic area.

May has been most interesting, and we leave it reluctantly, consoled only with the hope that June will be equally as pleasant. Please extend a special invitation to the Hennings for us, and we promise them a mighty happy surprise.

****

CHACO CANYON

By Thomas C. Miller, Custodian

General

Approach road to the south has received some much needed maintenance this month. The Indian Service have been over the road several times with their grader. The approach road to the north was repaired and maintained by the State. The blow sand north of Escavada Wash was much improved and almost elliminated for a few days during the first part of the month. However, the first windstorm we had leveled the sand up, completely covering up our road. Since that time we have had a lot of trouble getting visitor out of that sand bed. That sand is sure giving this monument a bad reputation on roads. We are careful to explain that this sand bed is not a part of the Monument, but that does not help the visitors' feelings much. The visitors from the north are being discouraged about trying to get into this monument on account of roads. While our travel is under that of last month, we are not complaining about the number of visitors. We figure that just the very best ones get here, while the others get discouraged and turn back, so what we lack in quantity we surely make it up in quality.

Weather

Weather conditions have been excellent for the most part of the month. Weather statistics follow: Maximum temperature, 82 on the 3rd; minimum temperature, 28 on the 1st; precipitation, .50 inch was recorded for the month. The greatest in 24 hours was .28 inch on the 7th.

Range Conditions

Range conditions are very good. The grass, flowers and small shrubs are showing greater growth than ever before.

Travel

Registered by cars 496 people arrived in 162 cars, coming from 13

states. Museum and guide service was rendered to 139 people in 36 parties.

Special Visitors

F. D. Mathews, district manager, with Engineers Fife and Slattery inspected our Soil Conservation project May 1.

W. W. Postelwhaite, treasurer, W. H. Drea, dentist, Paul E. Boucher, professor of physics, all of Colorado College, Colorado, were interested visitors on the first. Dr. R. G. Fisher and Stanley J. Milford, Santa Fe, inspected work being carried on by the Univerity of New Mexico on their Headquarters buildings, on the first and second. State Highway Engineers Dwyre, Summer and Starkey were here inspecting the blow sand north of Escavada Wash and made the ruins trip May 5. J. L. Petterson, formerly of this Monument, and party, arrived on the 16th and departed on the 17th. W. G. Proper and Jack Snow, Soil Conservation Service photographers, were here on business on the 19th. Mr. Lionel Palmer, Superintendent of Schools, San Juan County, and party, were interested visitors on the 20th.

National Park Service Officers

Associate Engineer Hamilton arrived and departed on the 5th. A. E. Borell, wildlife technician, arrived on the 14th. Mr. Borell will be with us for some time exterminating rodents around our dikes in this monument. Ranger Hart, Aztec Ruins National Monument, and party were here looking over some good ruins on the 18th.

Soil Conservation Service

This camp has proceeded in a satisfactory manner. New earth dikes were built near the proposed Headquarters area. Revetment work was continued around the ruins of Pueblo del Arroyo and Kin Kletsoi. At this time 20 laborers and two dump trucks are being used on the project. 2000 Parasela shrubs have been planted for bank protection during the month.

Rodent Control

Trapping of rodents around the earth dikes constructed by the Soil Conservation Service in this monument began on the 15th. One Karbo Killer pump and 15 gallons carbon bisulphide gas arrived on the 16th. The pump was put in use Monday, the 18th. To date we have used 7⅓ gallons of the gas; it seems fairly effective. However, on porous places we have to repeat several times to kill all of the rodents. We are working long hours to complete this work as soon as possible. Mr. Borell is certainly working hard and putting in long days on this work. The Custodian has assisted in this work as much as possible. The Soil Conservation Service donated two Navajos and a biologist to assist in the work. A full report on rodent

control will be made by Mr. Borell when the job is finished.

University of New Mexico

Their Headquarters building is looking more like a house every day; they are pushing the work as fast as possible to completion by June 15, when their Archeological Field School is scheduled to start.

New Equipment

The new 1½-ton dump truck was received on the 15th. It is a good looking job and we are very proud of it. It was immediately put to work hauling water, maintaining fence,etc.

Bird Banding

Set one bird trap April 27; caught several birds and banded two. The others I did not have the heart to burden with bands on their legs, so turned them loose. I learned that you cannot trap birds with out frightening them, causing some of them to hurt their heads, so I decided I would just study the birds in other ways. No doubt I will be hearing from our Naturalist on this but that is the way I feel about bird banding. The birds banded were two Russet-backed Thrush, Hylocichla ustulata ustulata (Nutall). Band numbers 202801, 202810.

(Ed. Note: If Custodian Miller will read Paragraph 3, Page 1, and Paragraphs 2 and 3, Page 7, of his Bird Banding Manual, he will discover that his mentioned objections are ones solved several years ago by the application of proper methods which are there detailed. Our experience at Headquarters is that birds are invariably frightened at the first capture, become very tame later. Many of our "chronic offenders" have been captured 50 or more times, apparently regard the handling as the not-too-unpleasant aftermath of an easily obtained meal. "Burdening the birds with a band" is a slight overstatement, inasmuch as a recent reference in an ornithological magazine brought out the point that a band on a bird has relatively the same weight as a bracelet on a lady.)

****

BANDELIER

By Jerome W. Hendron, Ranger-in-Ch

Visitors

Visitors numbered 833, arriving in 224 cars, from 35 states and the District of Columbia, Australia, Holland, China, Canada, Scotland, England, Nova Scotia, Switzerland, Italy, Mexico, Belgium, France, and Africa. Twenty-eight states were represented by cars.

The six highest states in order by visitor count were: New Mexico,

463; California, 51; Colorado, 40; Texas, 37; Kansas, 30; and New York, 20.

Visitor attendance for this month shows an increase of 98 or 13.19% over that of May, 1935, and an increase of 91 over last month. Travel has been much heavier over week ends than during the week.

Since May 15, there have been 24 return visitors either by themselves or with friends or relatives.

Weather and Roads:

Days partly cloudy	22	
Days cloudy	1	
Maximum temperature	83	May 3.
Minimum temperature	32	May 7.
Mean Maximum	75	
Mean Minimum	45.4	
Precipitation	.91	Against 1.79 for May, 1935.
Snowfall	.40	melted snow, May 7.
Rain and sleet		May 4, 15, 17, 18, 19, 23.
Dust storms		Slight, May 18, 20, 22, 23.

Weather has been good in general with the exception of a few slight rauins, and a few dust storms; the heaviest one occurring on May 23, lasting most of the day.

Roads have been exceptionally good with the exception of a few corrugated places.

Visitor Trip Chart

Fifty-nine parties were conducted through the ruins, numbering 346 people. The average time per trip was 63.38 minutes. Five parties, numbering 23 people, were given talks without ruins trips or with only partial ruins trips, averaging 57 minutes per party. Several special talks were given at the hotel during the lunch hour, and also in the camp ground.

Special Visitors

May 9 - Mr. and Mrs. Chuck Richey were in, accompanied by Mr. and Mrs. J. E. Kell. Mr. Kell is connected with the State Parks Division. Chuck remained only a short while and then rushed off to Mesa Verde. May 10 - J. J. McEntee, Assistant ECW Director, was in the canyon on an inspection tour, accompanied by J. A. Chase, Commander of the Albuquerque CCC district, Frank C. W. Pooler, regional district forester, C. C. Dalcomb, F. H. Flint, Harley J. Helm, V. C. Campbell, all of the Soil Conservation Service in Albuquerque, Q. B. Sandberg of the Soil

Conservation Service, Washington, D. C., and Frank Andrews, Santa Fe National Forest Supervisor.

R. A. Livingston, Superintendent of Shiloh National Military Park, was in for lunch with his family. Mr. Livingston is making a tour of national parks and monuments.

May 13 - Mrs. Lansing Bloom paid us a short visit with a party from Santa Fe. Mrs. Bloom is the wife of Professor Lansing Bloom, of the University of New Mexico History Department. Professor Bloom is recognized as an authority on Southwestern History.

May 21 - Paul Kirkhart, Superintendent of the High School of protection, Kansas, was in with a group of his students. Mr. Kirkhart makes a trip each year with his senior class visiting a few National Monuments and other important sites. This was his fourth time in Frijoles Canyon; his last visit was in 1934.

May 23 - J. E. Koll, ECW State Park Regional Inspector, was in with J. T. Roberts of State Parks, R. D. Morgan, Superintendent of CCC Camp SP-33-7, Marathon, Texas, and W. M. Anderson, Superintendent of Camp SP-14-T, Canyon, Texas.

General

It seems pretty lonesome out here without Earl, but I heard indirectly the other day that he is going to get well soon. Here's hoping that he will soon be back with us again. He will, though, because he has the grit and determination or whatever it takes to get along, and too, he has Betty so you can bet your boots that he isn't going to let this illness keep him down.

We had what might have been a real forest fire the other night. It was about three and a half miles from here over the Alamo Canyon way. Forester Jim Fulton left early the next morning and had everything under control in a few hours. Jim likes forest fires; then he has an excuse for being tired.

I have a 5 o'clock trip to make around the ruins so this will be all 'til next month.

****

BANDELIER E.C.W.

By H. B. Chase, Project Sup't.

Quarters No. 1 in the residence area was completed this month and is now ready for occupancy. Some landscape and planting work yet remains to be done on the grounds surrounding the building.

The walls of Quarters No. 2 are now constructed to door and window

height. The placing of lintels and vigas will start immediately. The timber crew has this month delivered approximately one hundred logs from the Santa Fe National Forest to the building sites of quarters 2 and Residential Area Equipment Shed for use in construction of these buildings. Hewing and shaping of this timber into vigas and lintels will start immediately.

Construction of the Park refuse burner was started this month on the north mesa near the rim of the canyon; at this time the base has been poured and all forms in place for the pouring of the structure proper.

Flagstone floor material has been quarried and delivered to the building site for construction of floors in the museum building project. All wall, ceiling, roof and portal construction has been completed and upon completion of floors this building will be ready for museum case installation. Recent preliminary case plans indicate interior plastering of this building will not be performed until the cases have been installed.

A small amount of trail maintenance work on the trail from headquarters to the Rio Grande River has been completed. Considerable work will be necessary near the lower end of this trail.

The planting of small shrubs along the entrance road and around the headquarters and residence areas has been in progress by the landscape crew.

The usual busy rock quarry operation has been in progress all month.

On May 10 this camp was visited by Mr. J. J. McEntee, Assistant to ECW Director Fechner. Mr. McEntee was accompanied on his inspection trip by Mr. Frank Pooler, Regional Forester of Albuquerque, Major J. A. Chase, District CCC Commander of Albuquerque, and Mr. K. D. Balcomb, representative of Soil Conservation Service of Albuquerque, together with other members of both the Soil Erosion Service and Forest Service. Mr. McEntee and his party inspected the entire camp and then the major technical service projects, both those now in progress and those completed in previous periods. After inspection of the entire ECW activities the party took the trip through the ruins under the guidance of the Acting Custodian, Mr. Hendron.

On April 16 the writer visited the other Southwestern Monuments' camp, located at Chiricahua National Monument, spending two days at this monument with the Project Superintendent, Bill Stevenson, going over the monument interests and project activities. This was a very enjoyable visit as well as instructive by viewing the activities of other camps. After the stay in Chiricahua I went to headquarters at Coolidge, spending two days with headquarters officials discussing Bandelier projects

and problems. En route back to Bandelier I visited Wupatki, Sunset Crater, and Walnut Canyon National Monuments, out of Flagstaff. All of them I found very interesting. This entire trip held many interests throughout and I enjoyed particularly the cordiality shown by Project Superintendent Stevenson and Mrs. Stevenson, Superintendent Pinkley and his Assistant, Hugh Miller, and staff in headquarters, and Jimmie and Mrs. Brewer at Wupatki National Monument.

****

BANDELIER FORESTRY

By James Fulton, Forestry Foreman

During the first week of this month, my time was spent painting the interior of Quarters No. 2. Just before I acquired the title of Forester-Painter, the painting reached its closing stages.

Since the painting, I had charge of a timber-cutting operation. At this writing there are 100 logs containing about 11,700 F.B.M. cut, peeled, and delivered to Frijoles Canyon. This material was cut off the right-of-way of a new road the Forest Service is building over the top of Sawyer Mesa.

Maintenance of the lower Frijoles trail is a project I am just commencing. This year the trails are in much better condition than they were last year. Opening the drains last fall probably had a lot to do with this.

This is the beginning of fire season in this part of the country. We celebrated its opening by having a fire. On May 20 I used a crew of ten men to suppress a snag fire on the north rim of Alamo Canyon in Section 21. We left for the fire at 4:00 a.m., cut down the burning snag, built 135 feet of fire line, mopped-up, and arrived back at camp at 9:00 a.m. Subsequent patrol proved the suppression work was well done.

****

MONTEZUMA CASTLE

By Martin L. Jackson, Custodian

As per your orders am getting this report out on the 23rd instead of the 25th as usual. The visitors were counted up to and including the 22nd. As you will see our count will be three days short this month, with on Sunday thrown in.

Total number of visitors registered for month were 773; total number that climbed the ladders, 343.

Roads leading in to the Castle are about the same as usual other than highway 79 which has been out for part the time during the month.

I understand that the contracts on this road are almost completed, that the road has beeen widened, the grades cut down and that it is really a pleasure to drive over it now. The road referred to above is state highway 79 between Jerome and Prescott, which has always been a very scenic drive.

Ranger Fish left on his vacation on the 15th. He said that most if not all his vacation would be spent in northern California. A letter from him since his arrival there says everything is lovely. Charlie Steen is relieving while Fish is on his vacation. Needless to say that Charlie took over the duties and went ahead without any interruption in service. You will no doubt recall that Charlie was with us a part of the summer of 1934. So it was more like coming back home than a new job.

Steen visited Tuzigoot Pueblo during the past week; says he enjoyed it very much, and that he could appreciate the work done there under the supervision of Messrs. Spicer and Caywood. However, he saw one thing there that he could not understand. Why should a wheelbarrow that had a hole worn in the bottom of the bed be patched with a Montezuma Castle "road sign." Was nicely bolted down and seemed to lend itself very nicely to that purpose. Would say in passing that I have been wondering for some time where some of our road signs went. Is it possible that this is the solution?

Park Service Visitors

Mr. and Mrs. Natt N. Dodge, ranger from the Grand Canyon, were in on the 7th.

Mr. and Mrs. H. E. Bailey, botanist from the Berkeley office, were with us for a couple of days during the month. They were gathering specimens on the monument, and we expect much good to come from their visit. To my knowledge Mr. Bailey is the only one that has studied the flora of the monument to any extent.

Mr. and Mrs. J. B. Hamilton from Mesa Verde paid us a visit on the 11th.

For the past two or three years an old White-Wing Dove has made himself rather conspicuous around the museum in that he had seemingly appointed himself as a committee of one to administer a beating to all the other White-Wings, Mourning Doves, and Quail. He disappeared during the past winter and we were all mourning his death. But on looking out the museum window on the morning of the 4th, we saw a very familiar looking White-Wing. We were all wondering if it could be the old' whitey' that we had known in the past. We only had to wait until another dove appeared on the scene. He immediately drove it away, then came back to the door of the museum and made a funny kind of a cooing noise peculiar

CAPULIN MOUNTAIN

By Homer J. Farr, Custodian

I would say that about 1,500 visitors to the Monument this month, although there is a possibility that we would have had several hundred more had the road been in first-class condition. The custodian has been doing a small amount of rock removing and cleaning on the road the past week and this has been of some benefit. The trails remain in very good condition. There is a large strip of U. S. 64 and U. S. 87 under construction between Capulin and Raton at the present time and this is expected to divert considerable of the potential traffic that we might have to the Monument this summer; then when the road is completed of course we expect to get much more as all between Raton and Des Moines is expected to be paved.

Weather has been peculiar, some rain the latter part of the month and a very heavy rain in a small strip on the sixth, and a general rain on the 18th approximately .77 inch all over the County. There is plenty of high wind, but the dust is not so bad as other springs.

At this writing we are having colder weather than we have had for several months, and we have had more cloudy days during May than for many many months.

****

HEADQUARTERS STUFF

BRANCH OF EDUCATION

By Robert H. Rose, Park Naturalist

The Educational Staff of Headquarters has consisted of Junior Naturalists Dale S. King and Charlie R. Steen, and Park Naturalist Rose. King has been on headquarters duty all month.

From May 1 through May 7, Steen was on visitor contact duty at Casa Grande while from May 8 through May 12, he completed the Tonto museum catalogue and made considerable progress on the geographic place names project. Leaving headquarters the following day, he has been on special assignments at Walnut Canyon and Montezuma Castle National Monuments during the remainder of the month.

The special assignment of Park Naturalist Rose to Rocky Mountain National Park, reported in April and outlined presently, continued into this month. Leaving Estes Park on May 13 he arrived Phoenix on May 15 and reached headquarters the same day

Headquarters and Field Personnel Changes

Effective May 1, Louis R. Caywood transferred from Junior Park

Naturalist, Southwestern Monuments, to the position of Custodian, Tumacacori National Monument.

Concurrent with the above transfer, Ranger Charlie R. Steen of Casa Grande National Monument was transferred to the Junior Naturalist position.

The status of ranger-historian, ranger, and other seasonal positions in the field is as follows:

1. Jerome W. Hendron entered on duty May 7 as seasonal ranger at Bandelier National Monument. During a period of sick leave for Custodian Jackson, Mr. Hendron has assumed responsibility for the educational program of the Monument.

2. Appointment papers are submitted for the second seasonal ranger position at Bandelier.

3. Doug Harritt, seasonal ranger at Canyon de Chelly last summer, will return to his same old job in the near future. We are glad that Doug who served so successfully last season is again with us.

4. The ranger-historian position at Casa Grande will remain vacant until some time next winter. Contrary to the situation in nearly all national parks and most national monuments, the heavy travel season for southern Arizona and New Mexico national monuments occurs in the winter.

5. Under special arrangement, ECW provides a number of student technician positions. One of these positions has been allowed for educational work in the Naturalist Office and at Casa Grande National Monument. Approval of appointment is now pending in Washington.

6. The position of ranger-historian, Chaco Canyon National Monument, has been established in lieu of the seasonal ranger position of previous seasons. Appointment to this position should materialize within a few days.

7. Evon Z. Vogt, Jr., entered on duty at El Morro as acting ranger during the latter part of the month.

8. Deric Nusbaum is to fill the new position of Travelling Ranger for the "four corners" region designated as seasonal ranger, Yucca House National Monument.

9. Zeke Johnson began duty May 1 at Natural Bridges in his same old position.

10. A seasonal ranger-historian position is provided at Navajo, and appointment should materialize in the near future.

11. Filling the Tonto seasonal ranger position is now under way.

12. Paul Beaubien has been on duty at Walnut Canyon during the month as seasonal ranger.

13. Jimmie Brewer is being taken up on seasonal ranger status at Wupatki.

Detail at Rocky Mountain

Leaving Headquarters, Southwestern Monuments, on April 15 I arrived at Rocky Mountain National Park at 12:30 p.m. on April 18. While on this assignment the following work was done relative to getting the educational work in condition for their travel season:

1. The Headquarters and the Moraine Park museums were given a thorough cleanup. Tools, office supplies, lantern slides, books, pamphlets and relief models were segregated. The shelves and cabinets were cleaned and the floors were swept. Materials were placed in order in various places where they belonged.

2. The Arapaho Group in Moraine Park Museum, damaged considerably by pack rats, was cleaned up and such repair work done as could be performed with the materials at hand.

3. A segregation of pamphlets and separates was made and a temporary alphabetical file prepared. This file will need further improvement and breakdown but it at least affords a convenient place where pamphlets can be found.

4. Thousands of general information booklets were stored in space prepared beneath the stair steps. Approximately 50 mail sacks were cleaned and returned to the Post Office.

5. A file of cuts from Nature Magazine and used in Nature Notes was started a few days prior to my arrival. During the course of the Moraine Park Museum cleanup another mass of these cuts was found. Catalogue cards were prepared for these and identifications were made of as many as could be found in the incomplete Nature Magazine file.

6. Some time was taken for the preparation of an illustrated talk on the Southwest which was given on May 7 before the Estes Park Rotary Club.

7. About half of a lot of some 40 books, pamphlets, etc., classed as "lost" was found by searching the library and in the course of the cleanup work.

8. A scheme was worked out for a permanent mount for the labels belonging to the habitat groups in the Headquarters Museum. En route to Arizona I stopped in the E. W. Robinson Company in Denver, outlined

the type of mounts desired, and placed the order for nearly twenty of them of various sizes. The manufactured mounts should be in keeping with the excellent quality possessed by the cases and the exhibits themselves.

9. Questionnaire to CCC enrollees was prepared for the purpose of determining special talents for certain educational work. Distribution was delayed until nearer the time of the travel season.

10. A list was prepared of some $35.00 worth of books to be ordered for the park library.

All in all, as much work as possible was done toward getting the museums and the educational department generally, ready for the coming season. On May 13, in company with Superintendent Rogers, I went to Denver to take the train for home. Arriving Phoenix at 9:30 May 15, I reached headquarters the afternoon of the same day.

Administration, Clerical, Personnel

Due to Park Naturalist Rose's absence on the detail referred to above, the Educational Contacts records for April were not tabulated and published. For that reason the tabulations for both April and May will be found in the closing pages of this Division report.

Results have been received on the Visitor Question Survey which was started during March. These results were published in the April Monthly Report. Further reports on this survey are to be found in the May Supplement.

Among other items accomplished are: (1) Continuation of the enlargements file; (2) complete cleaning and tabbing of nearly 200 colored lantern slides of the Kino Missions; (3) preparation of personnel papers for various positions; (4) preparation of memoranda and general instructions in various positions; and (5) handling several items of general correspondence.

Gifts and Accessions

During the months of April and May the following gifts and accessions have been received:

(1) Three sets of enlargements of the Kino Missions pictures from the Field Division of Education.

(2) A consignment of about 200 colored lantern slides on the Kino Missions and general southwestern scenes from Field Division of Education.

(3) A consignment of University of Arizona Bulletins from the University

of Arizona Press.

(4) The publications of interest to us put out by the Colorado Museum of Natural History.

(5) About 500 fillers for a photograph album from Field Division of Education. These are being used in the preparation of a Kino Missions Album for Tumacacori National Monument.

Outside Contacts

(1) On May 7, Park Naturalist Rose gave an illustrated talk before the Estes Park, Colorado, Rotary Club; attendance about 35; subject, "Archeological and Historical Background of the Southwest."

(2) Using El Morro and Tumacacori National Monuments as the central theme of interest, Park Naturalist Rose gave an illustrated talk on the evening of May 25 before CCC Camp SCS 15-A at Tucson; attendance, 200.

Activities along other lines will be covered in the reports of Naturalists King and Steen which follow:

Report of Junior Naturalist Dale S. King:

OFFICE WORK

10 days on April Monthly Report
Wrote 46 letters
14 hours cataloging and filing library material
Sent botanical supplies to Pipe Spring, Wupatki, Navajo, and Chaco Canyon.
Sent bird-banding supplies to Tumacacori and Wupatki.
Mimeographed 500 natural history observation file cards
Three hours on Broadcast.

NATURALIST WORK

Prepared two Gambel Quail skins for study collection.
Renewed napthalene in storage cases.
Ordered trail labels for Walnut Canyon from Berkeley.
Kept botanical master file current.
Six hours on fiscal year report of bird banding for Biological Survey
Kept bird banding file current (personal time).

MUSEUM PLANNING

Completed plans for Case 2 (Physical Anthropology), Bandelier Museu, and forwarded them to Berkeley for preparation.

MISCELLANEOUS

Irrigated transplanted mesquite trees. Three hours government time, three hours personal time. Spent approximately nine hours personal time enlarging basins, replacing screens with finer-meshed ones to better protect from small rodents.

Report of Junior Naturalist Charlie Steen

May 1 - 7 - Guide duty at Casa Grande National Monument, with exception of two days sick leave.

8 - 11 - At Headquarters, Southwestern Monuments, completing the catalogue of the Tonto collection and mailing maps for designation of place names.

13 - Left Headquarters for Walnut Canyon National Monument.

14 - Spent the morning at Walnut Canyon and then left for Montezuma Castle where I relieved Ranger Frank Fish who then left on annual leave. Fish intends to return about June 26.

At Walnut Canyon I bragged a bit about my new camera and Paul suggested that we take some pictures of the artifacts which he recovered last winter at Tumacacori. My claims for the camera were substantiated by the results; some fine photos were obtained; these Paul intends to use in his report. I have also taken a number of pictures of articles in the museum here at the Castle.

With Norman Jackson five new birds were banded: two female Gambel Quail and three juvenile Say Phoebe.

VISITOR CONTACT RECORDS

By Robert H. Rose, Park Naturalist

Due to the absence of Park Naturalist Rose the visitor contacts tabulations for April were held over and appear in this report together with statistics for may. Following are observations:

1. For the travel period beginning with October, 1935, travel for May represents a new "high" of 22,833 visitors; April with 18,830 was second; March with 15,379, third; and January at 14,044 was fourth.

2. Visitor contacts termed "education contacts" for the same period show 14,204 for April as the "high"; 14,087 for January as second; 12,824 for March as third; and 12,785 for March as fourth. Visitor contacts of 10,656 for May are the lowest for the eight month

SOUTHWESTERN NATIONAL MONUMENTS

MONUMENT	EMPLOYEES		GUIDED TRIPS					MUSEUM LECTURES					MUSEUM UNATT'D		LECTURES OUTSIDE		MISC		TOTAL EDUCN CONTACTS	TOTAL TRAVEL
	PERM	TEMP	NO	ATT	TIME	AV ATT	AV TME	NO	ATT	TIME	AV ATT	AV TME	NO	ATT	NO	ATT	NO	ATT		
ARCHES	1/165	0																	(NO REPORT)	
AZTEC	2	0	118	571	4371	4.9	37	110	579	1723	5.3	16	5	12					1,162	701
BANDELIER	1	0	76	308	4425	4.1	58										17	56	364	742
C.DECHELLY	1	0	7	22	1515	3.0	216												22	22
CAPULIN	1/165	0	1	6	90														6	600
CASA GNDE	2	0	378	3251	13294	8.6	38	242	2163	5290	8.9	22	180	1088					6,502	3,436
CHACO CYN	1	0	29	211	2550	7.8	88	29	176	870	6.1	30							387	791
CHIRICAHUA	0	1	18	77	3320	4.3	180												77	550
EL MORRO	1/5	0	10	42	300	4.2	30												42	42
GILA CLIFF	0	0																	0	(NO REP)
GRAN QUIV.	1	0	52	229	2730	4.4	53												229	229
HOVENWEEP	0	0																	0	(NO REP)
MONTEZUMA	2	0	144	902	6929	6.3	48	173	916	3153	5.3	18.2							1,818	1,054
N'TL. BRGS	0	0																	(NO REPORT)	
NAVAJO	1/165	0	7	36	720	5	103												36	(NO REP)
PIPE SPGS	1-lab.	0	20	96	432	4.8	22												96	96
RAINBOW BR	0	0																	0	(NO REP)
SAGUARO	0	1	144	489	5490	3.5	38												489	1,200
SUNSET CR.	0	0																	(NO REP)	289
TONTO	0	1	90	546	5515	6.1	61	88	476	1375	5.4	16							1,022	876
TUM.CACORI	2	0	276	1542	9226	5.6	33												1,542	1,700
WALNUT C'N	0	1	100	343	3125	3.4	31										8	23	366	647
WHITE SNDS	1/5	0																	(NO REP)	5,709
WUPATKI	0	1	16	44	878	2.8	55												44	146
YUCCA HSE	0	0																	0	(NO REP)
HDQTERS																				
TOTALS	13.4	5	1486	8714	64809			642	4310	12411			185	1100			25	79	14,204	18,830

*12 full time permanent custodians and rangers; 1-acting custodian; no ranger naturalists; and 2-temporary rangers; others on miscellaneous assignments.

STATISTICAL SUMMARY ON EDUCATIONAL CONTACTS FOR MAY 1936

SOUTHWESTERN NATIONAL MONUMENTS

MONUMENT	EMPLOYEES		GUIDED TRIPS					MUSEUM LECTURES					MUSEUM UNATT'D		LECTURES OUTSIDE		MISC		TOTAL EDUCTN CONTACTS	TOTAL TRAVEL
	PERM	TEMP	NO	ATT	TIME	AV ATT	AV TME	NO	ATT	TIME	AV ATT	AV TME	NO	ATT	NO	ATT	NO	ATT		
ARCHES	1/165	0																	(NO REPORT)	
AZTEC	2	0	147	853	5200	5.8	37	138	854	2682	6.2	19.5	4	7					1,714	1,172
BANDELIER	1	1	59	346	3741	5.9	64										5	23	369	833
C.DECHELLY	1	0	22	120	4830	6.0	220												120	158
CAPULIN	1/165	0	3	14	180	5.0	60												14	1,500
CASA GRNDE	2	0	301	1867	8971	6.2	30	194	1099	3829	5.7	20	135	768					3,734	2,234
CHACO CNYN	1	0	36	189	2951	5.3	82	33	166	498	5.0	15							355	496
CHIRICAHUA	0	2	25	130	4790	5.3	192												130	462
EL MORRO	1/5	0																	(NO REPORT)	
GILA CLIFF	0	0																	0	(NO REP)
GRAN QUIV.	1	0	61	575	2965	9.5	49												575	575
HOVENWEEP	0	0																	0	(NO REP)
MONTE UMA	2	0	121	602	4478	5.0	37	127	690	2357	5.4	19							1,292	773
NATL. BDGS	0	1	6	25	1440	4.0	240								2	260	22	133	418	151
NAVAJO	1/165	0																	(NO REPORT)	
PIPE SPGS	1-lab.	0	16	81	400	5.0	25								1	36			117	392
RAINBOW BR.	0	0																	0	(NO REP)
SAGUARO	0	0																	0	(NO REP)
SUNSET CR.	0	0																	(NO REP)	283
TONTO	0	1	49	179	3295	3.6	67	61	205	1025	33	17							384	365
TUMAC GORI	2	0	135	560	4255	4.2	32												560	705
WALNUT CYN	0	1	95	338	3080	3.6	33	61	208	1450	3.4	24							546	648
WHITE SNDS	1/5	0																	(NO RPT)	11,880
WUPATKI	0	1	19	93	1165	5.2	93												93	166
YUCCA HSE	0	0																	0	(NO RPT)
HDQTERS															2	235			235	
TOTALS	13.4	7	1095	5972	52341			614	3222	11841			139	775	5	531	27	156	10,656	22,833

*18 full-time employees, part-time employees, seasonal rating, contributing no person-days

period except for the "low" of 8,492 contacts for December.

3. The visitor contacts "low" for May (next to lowest) contrasts with the visitor travel "high" for the same month. This contrast is partly due to the following factors: (a) Due to the illness of Custodian Tom Charles, some 1500 contacts usually made for White Sands are not included; (b) Casa Grande travel drop of about 1,200 in May below the April count causes a drop of about 2,000 in contacts; (c) There is a drop of 800 to 1,000 contacts for Tumacacori; and (d) with a few exceptions, travel has decreased for monuments having museums and increased at those not having museums. This operates to cause contacts to fall off because in monuments having museums a given number of visitors accounts for upwards of double that number of contacts whereas this is not the case in monuments without museums.

Assistance in Visitor Contacts:

An arrangement has been worked out at Bandelier and Chiricahua for assistance in visitor contact work. Following are reports for these uments:

	April, 1936	May, 1936
delier	40 man-days	40 man-days
ricahua	20 man-days	40 man-days
TOTALS	60 man-days	80 man-days

****

ANCH OF ENGINEERING

By John H. Diehl, Park Engineer

Called at Alamogordo on the 2nd and visited the May Day celebration White Sands, where not only the school children but also adults present e enjoying themselves playing and tumbling all over the sand dunes. The tivities were attended by school children and people from homes as far tant as Amarillo, Texas. Needless to say, the scars of the day were pletely erased with the first light wind.

On May 20 another visit to Alamogordo was made to discuss matters h Mr. Charles and Mr. Happer pertaining to the White Sands and the s project.

May 19 at Gran Quivira I found the purp house practically finished. eman Gipe has done a good job with the materials at hand and the

EIGHT MONTHS TABULATIONS SUMMARY
OCTOBER 1935 - MAY 1936 INCLUSIVE---

MONTH	FIELD TRIPS		MUSEUM LECTURES		MUSEUM UNATT'D		LECTURES OUTSIDE		MISC		TOTAL EDCATNL CONTACTS	TOT
	NO	ATT	NO	ATT	NO	ATT	NO	ATT	NO	ATT		TRA
OCTOBER	1045	6760	389	2805	175	1481	1	115	313	1157	12,318	12,
NOVEMBER	1072	6354	295	1859	171	1365	7	485	156	584	10,647	11,
DECEMBER	926	4769	284	1508	30	1793	1	20	70	402	8,492	8,
JANUARY	964	6568	461	3008	128	1072	20	2283	289	1156	14,087	14,
FEBRUARY	1141	7200	474	3369	81	711	11	1084	96	460	12,824	13,
MARCH	1274	7348	535	3474	85	691	7	341	174	931	12,785	15,
APRIL	1486	8714	642	4310	185	1100			25	79	14,204	18,
MAY	1095	5972	614	3222	139	775	5	531	27	156	10,656	22,
TOTALS	9003	53685	3694	23555	994	8988	52	4859	848	4925	96,013	117,

EIGHT MONTHS TABULATIONS SUMMARY BY MONUMENTS
OCTOBER 1935 - MAY 1936 INCLUSIVE

MONUMENT	FIELD TRIPS		MUSEUM LECTURES		MUSEUM UNATT'D		LECTURES OUTSIDE		MISC		TOTAL ED. CNTCT	TO TRA
	NO	ATT	NO	ATT	NO	ATT	NO	ATT	NO	ATT		
ARCHES											(NO REPORTS)	
AZTEC	710	4256	681	4245	11	24	3	600			9,125	4,
BANDELIER	361	1824							156	553	2,357	3,
C.CHELLY	76	279					1	350	1	4	633	
CAPULIN	13	85									85	5,
CASA GDE	2588	19640	1417	11421	983	8964	1	100			40,125	21,
CHACO C.	240	965	81	420					55	225	1,610	3,
CHIRICAH	43	207									207	2,
EL MORRO	46	264							3	9	273	
GILA CLFF											0	(NO
GRAN QUIV	135	1750	13	78							1,828	2,
HOVENWEEP											0	(NO
MONTEZUM	712	3907	888	4364					4	31	8,502	5,
NATL. BR.	6	25					22	1750	31	233	2,008	
NAVAJO	7	36							16	40	76	(NO
PIPE SPG	151	810					5	99			909	2,
RAINBOW											0	(NO
SAGUARO	415	1478							1	200	1,678	6,
SUNSET C									20	61	61	
TONTO	571	2981	553	2819							5,800	4,
TUMACAC.	1821	9534									9,534	10,
WALNUT C	375	1437	61	208					104	384	2,029	3,
WHITE SD	396	3672					2	400	738	3121	7,193	38,
WUPATKI	107	486					2	150	27	84	720	
YUCCA HS	2	10									10	
HDQTERS							16	1410			1,410	
TOTALS	9003	53645	3694	23555	994	8988	52	4859	1156	4925	95,073	117,

* Three radio broadcasts and two showings Park Service films during per

shortage of funds, but the outside appearance of the masonry will be criticized by the landscape inspector. However, it was essential that a house for protection of the pump be constructed, and with lumber materials and transportation so costly it was considered preferable to build the masonry house.

May 21 at Chiricahua National Monument the bank sloping project was covered quite thoroughly with ECW Superintendent Stevenson, and a report has been made covering this problem.

The evening of the 21st I arrived at Casa Grande National Monument where matters in general pertaining to the Southwestern Monuments have been covered with Superintendent Pinkley.

The morning of the 26th, in company with J. H. Tovrea, it was necessary to say "So long" on my way to Oklahoma City.

A. E. Clark and Carl Schmidt have been busy all month at Chiricahua continuing the topographic survey of the monument.

The conditions are rough and slow so that Andy estimates that two months more at least will be required to complete the work.

J. H. Tovrea, engineering aide, has spent most of the month on office work and taking care of detail assignments.

**

By J. B. Hamilton, Associate Engineer

Mrs. Hamilton and I left Mesa Verde National Park the afternoon of May 6 and drove to Aztec Ruins National Monument and stayed with Johnwill and Lena Faris overnight.

Bert Hart, his wife and mother, dispensed hospitality of the true southern brand at dinner that evening.

Considerable change has taken place at Aztec Ruins since last I saw it, November 30 of last year. Johnwill has gotten a lot of useful work out of the CCC contingent he had from the Durango camp last winter. At the southwest corner of the ruins the homely old shed, which looked so out of place there, is gone. All about the Headquarters Area much planting of native shrubs and trees has been done. If they live, and they should with the care Johnwill is giving them, they will make a lasting improvement in appearances. The newly planned sewer system has been installed so as to care for the Monument needs for years, I believe. An adobe brick stucco covered wall has been built across the front of the residential area.

The seventh we drove to Chaco Canyon National Monument. It started

snowing on the way. When I struck the sand at Escavada Wash I did not know where I was, the dunes had shifted so much during the winter and visibility in the falling snow was poor. I followed some recent tracks and thanks to my semi-air wheels got through. Cal Miller tells me several tourists have wrecked cars in that sand stretch lately. He expects the Indian Service will cover the sand with shale soon.

In spite of slippery roads at Chaco we managed to see some of the work being done by the Soil Conservation Service. The temporary cattle guard, the sand filled permanent cattle guards, and the rods installed for marking the movement of Threatening Rock, if any. I also helped Cal Miller check the location of a newly excavated ruin on Monument land.

After lunch with the Millers, all six, we drove to Gallup. I had to wear chains from Crownpoint to Thoreau.

On the morning of the eighth I talked with Vogtie and tried to get to El Morro. The roads kept getting worse so I gave up about nine miles out from Gallup.

We drove that night to Roosevelt Dam, stopping for a few minutes at Petrified Forest on the way. We cut across country from Winslow through Pine and Payson, good dirt or gravel roads the whole distance.

The morning of the ninth we stopped at Tonto National Monument, where I met Woodrow Spires. We went through the lower ruins. He was wondering how to keep two tottering walls from falling with $20. I told him how I would attempt it if I had more money. One wall especially presents a difficult problem. Built on rubbish it looks as if it might fall if touched by a repair crew.

That afternoon we arrived at Casa Grande National Monument. We had the honor of having the story of the Monument told by the Boss himself. And a wonderful story it is as he told it. Talked some about problems at Canyon de Chelly and other monuments in my territory.

The tenth, Sunday, everyone at the Monument put in a hard day getting out the six-year program. I checked the El Morro steps account against Hugh Miller's books and sent the final construction report on that job. I also checked the Chaco Fencing account but could not prepare a final as there are some unsettled obligations.

Monday, the 11th, we drove via Phoenix and Prescott to Montezuma Castle National Monument. After a quick dash through the "best preserved ruin in the Southwest" and a few minutes talk with Custodian Jackson and his wife, we drove to Flagstaff via Oak Creek Canyon. That is a beautiful drive in the late afternoon.

That evening we went to Walnut Canyon, met Paul Beaubien, and from

the lookout gazed across the canyon just before dark.

The next morning, the twelfth, we drove out route 89 to the "Citadel." I should have gone on to the main Wupatki group of ruins but I wanted to make Mesa Verde that evening, just like any other tourist.

We continued through Cameron and Tuba City and had lunch at Kayenta. Was sorry to find none of the Wetherills at home. Aside from a few sandy stretches near Red Lake the road is good.

Continuing we drove down through Bluff, Blanding, Montecello, and Cortez to the Mesa, arriving at 10:10 p.m. That trip through Monument Valley and along the San Juan, between Mexican Hat and Bluff will long be remembered. I have seen worse roads and more interesting scenery, but not much worse nor more interesting.

At Blanding happened to see Zeke Johnson so stopped and chatted a few minutes. Sorry we could not have stayed longer.

****

NATURAL BRIDGES

By Zeke Johnson
(Last minute arrival)

I just came in from the Monument this noon. I have been sticking pretty closely to the job out there, and we are having by far the best travel for this month. Thirty-seven were out to the monument in April and 114 this month. It was May 20 before a car got in here a year ago.

Everything is lovely---lots of flowers and grass in the canyons. Water is very good, but we are badly in need of some rain, and it looks right now as if we were going to get some, for it is showering all around and looks as though it may settle down and give us a good rain.

The roads are about as usual, as is also the case with the trails. The trails are much better marked, however, than ever before, but only about one half the visitors see the Awanchomo (Edwin) Bridge. Just can't get them to hike over to Sipapu (Augusta). Only the more sturdy or good hikers will do it, but it's not bad when people will take plenty of time. I left camp this morning 20 minutes before seven with two young ladies from the East. We went to all three bridges, took plenty of time to take many pictures, and were back to camp 20 minutes before noon. There we ate our lunch and were in Blanding at 3:20 p.m. It seems to me that people are more lazy than they used to be.

I am sending, under separate cover, data for the folder you so kindly offered to print for me. I answered 156 requests for more information about the Bridges as a result of my little broadcast - representing 22 states in the United States, 5 provinces in Canada, and from old Mexico.

People are going to come, Frank, and I must be prepared to take care of them as best I can.

You ask me to make suggestions regarding the six-year budget. I wish I could have that one-half mile of road made that Mr. Hamilton surveyed several years ago. It is surely a sore eye to the monument. I have done all I can to make it better, but the sand on the two steep hills is so bad that lots of cars have trouble and there is no shale that I can get to put on them. If I had that ½-ton truck or pickup that you are going to get me I could easily fix it and many other places on that one-half mile road. I would much rather have that pickup than anything else.

Wood is getting scarce and a long way for people to carry it, and I would be willing to furnish it if I only had a pickup.

****

CLOSING

You would think twenty-two thousand visitors would keep the boys out of mischief for the month, wouldn't you, Chief? That is a little increase over the eighteen thousand we had last month so it looks like we are headed for a busy summer, though, looking back at January and February with about fourteen thousand and March with over fifteen thousand, I can't say we were loafing then. We are picking up a few of the old hands: Hendron, Peterson and Doug Harritt showing up in this month's Personnel Sheet, and more of the summer men will come on next month. Unless we get an unexpected peak in visitors this summer we will be in better condition to handle them than we have ever been before; not that we will have all our laces properly covered at all, just that there won't be so many of them open to vandalism and we will be able to reach a little larger percentage of the visitors who come and answer their questions.

We in the field have of course been more or less on edge during the month with the prospects of the proposed regionalization; how far it is going to reach, how effective it will be, how much stuff can we get decisions on out of the district or regional office, who will fill these regional offices and will they be worth a whoop in the way of giving us action when they do fill them, and so on ad infinitum. We are for these boys so far as we have heard who they were up to the time of this writing. Our Jack Diehl goes up to the regional office; our Chuck Richey goes into the Santa Fe district office; our Dick Sias, who used to argue with us down at Chiricahua, becomes our District Inspector, and so on. Of course, the handsome George Collins, who will head up the District ECW at Santa Fe, hasn't had the benefits of a course in Southwestern Monuments, but he is a likely lad and willing to learn and he has done the next best thing, he has served at the Grand Canyon.

CLOSING (CONT.)

From the field standpoint we want you to believe that we are anxious to help any way we can to make this regionalization work. We are expecting it will mean more paper work for us and we are willing to deliver it if it means more action and faster action on our stuff. We have broken in enough new machinery in our time to know that this new set-up will take a little time to work in and get going, and we are willing to withhold judgment for a couple of months until they can get into their stride. Here's to them and the new system, and may both make good with a bang! They are our personal as well as our business friends and we certainly wish them well and will do everything we can to cooperate with them.

My only field trip of the month was the one to Tumacacori with Mr. Tovrea. It was a pleasant trip, as the ones to Tumacacori usually are, and productive of some results which are incorporated in the Supplement of this report. We are putting out a separate of this paper as one of our Special Reports in order to get it into the hands of the technicians and others who ought to be kept in touch with the problems of this most interesting of missions.

We are also including in the supplement for this month, a technical paper on the White Sands by Regional Geologist Vincent W. Vandiver. We are putting out 250 copies of this paper as a separate, the greater part of which we will send over to Mr. Charles to be used in answering his more interested visitors who write to him asking how the white sands are formed. He has always had a steady demand from the more intelligent type of visitor for just such information. For the general visitor we are furnishing him with a single sheet leaflet giving general directions as to how to reach the sands and what to see there and containing an appeal for leaving the place clean for future visitors, etc.

Zeke Johnson writes us that he has had about 250 inquiries out of his last radio talk from interested listeners who want to know how to reach the Natural Bridges National Monument and we are getting out a short information sheet for him so he may be prepared to take care of future questions.

It must not be assumed from the above that we contemplate any general distribution in large numbers of these informational sheets; such is not the case. They are intended to be used in answering direct questions either by mail or in person and in such use will prove very valuable.

The month has been a busy one in the office as well as in the field and we are looking forward to an even busier month of June due to the natural peak of work which comes with the end of the fiscal year.

This report is not so bulky as some we have put out and we have been promising ourselves to try to scale our monthly reports down somewhat, but with twenty-five reservations scattered over four states it

seems a lot of things happen in the course of the month. We have tried to make the report as usable as possible by putting in an index page at the front, which allows any report for the month to be found instantly; putting in a Condensed Report, occupying six pages, which gives the highlights for the month with ready reference to the individual report concerned where further information can be gained in a moment; and at the end of June and December, giving a complete index of writers and subjects for the previous six months so that continuity of any subject can be traced through the six months period in a few minutes. The theory is that if you are in a hurry, and we presume you generally are, you can read the six pages of the Condensed Report and get the gist of what has happened during the month; they are supposed to be complete in themselves although of course condensed. If you are not in a great hurry you might care to run over the individual reports and see what this and that one is doing at greater length. As for ourselves, the condensed report does not cover our needs and we keep three copies of the Monthly Reports around the offices for ready reference and it would surprise you to see how much they are used.

We like to think, too, that these reports have a historical value and that a future historian will be able to get a good cross sectional view of life in the Southwestern Monuments during the years covered by these reports.

And so we turn this into the mail and go back to the job of making history for the June Report.

Cordially,

Frank Pinkley

Frank Pinkley,
Superintendent.

El Morro

By E. C. Vogt, Custodian

(Last moment News from El Morro.

Just as we are ready to begin gathering these sheets, we pick E. Z. Vogt's report out of the mail and give it space here without being able to allude to it in the Condensed Report. It is spot news and by next month will grow old, so we crowd it in, but hereafter, Evon, speed it up two days!)

In company with his son Evon and Daughter Pattie your custodian spent a half day leisurely inspecting El Morro. No visitors came tho some 150 had registered during May including one D. D. Bibo from Alaska, a large group of Boy Scouts from Eager, Springerville, and St. Johns, Arizona. New sheets were placed by us in the register as nearly every visitor coming here likes to leave his name and address.

No damage except the very slow and gradual wearing of wind erosion on the inscriptions was noticeable. Good moisture in the ground was bringing up ample protection of the filled-in area thru growth of weeds and grass. Dry Russian thistle of last summer's growth were also doing fine work to prevent soil movement. Some settling was apparent directly over where the great arroyo had been filled with dirt but no dangerous settling nor washing was taking place.

The union to be placed shortly in the syphon pipe from the water reservoir at the head of the valley will make camp water available for visitors without any need for driving up to the dam thus damaging the soil coverage.

Under the Oñate and Basconzelos inscriptions a three foot rattlesnake was asleep under the partial shade of a broad leaf yucca. He attempted to scare us off with the threats of his rattles. With sticks Evon, Jr., and Pattie contrived to get him coiled over my sombrero so that I was able to snap a picture of him directly under the three century-old inscriptions. Two other views were taken of this, the first rattler I have ever encountered near the cliff wall.

Birds were active with cliff swallows, turtle doves, blue birds and the "chinchontie" or mocking bird putting on a merry vaudeville. Near the poetic Manuel de Silva Nieto inscription of 1629 our eagle which nests high overhead had done some widely scattered spring white washing over the surface of the mesa.

The Bee-weed is in bud, the narrow leaf yucca about to burst into fragrant bloom. Piñon cones promise some crop of nuts but not so general or ample as was at first reported.

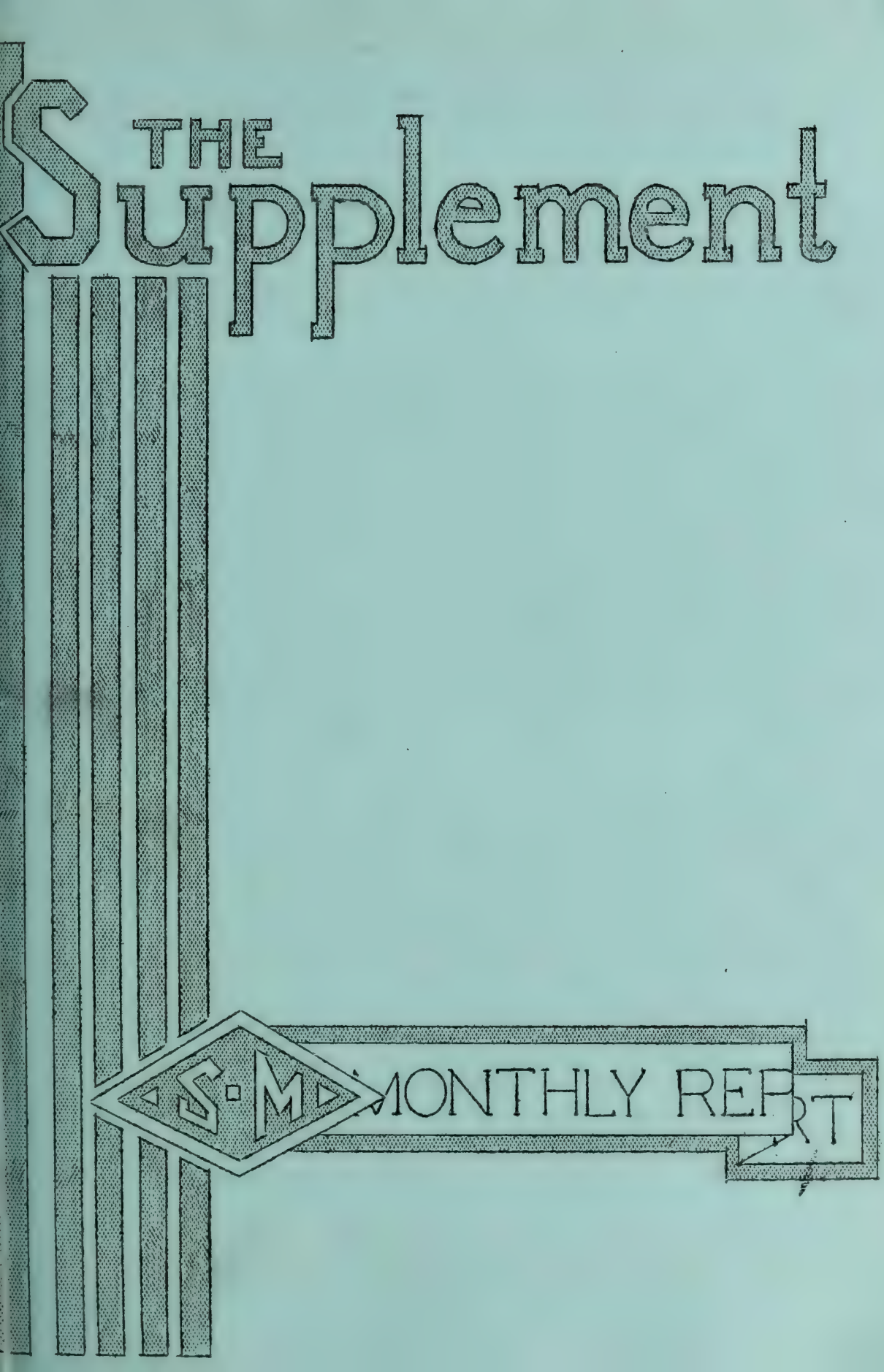
Roads are in fair condition from Gallup and Ramah though not to be recommended from Grants.

General feeling among ranchmen and farmers was good. Early crop showing, good green grass for sheep, cattle, and horses, gave hope for a good year while prices which have greatly improved for wool and lambs had a good effect on the entire community.

Indians, both Zuni and Navajo, were somewhat confused in the trend of government help but busy with their work of stock raising.

As I drove down from the Summitville, Colorado, mine thru the Mesa Verde country, I stopped to chat with the ranger at the entrance, learned of the transfer to Santa Fe of Engineer Hamilton and Mr. Richey, Near Towoac I was unable to wait for a Spear Dance in progress among the Utes. The friendliness and fusing of the Utes and Navajos was apparent here in the gathering of so many Indians.

THE Supplement



THE TUMACACORI CHOIR LOFT PROBLEM

By Frank Pinkley and J. H. Tovrea

A most interesting theory has recently been developed in connection with studies of the mission at Tumacacori National Monument. It is given here for what it may be worth and we freely admit that it may not check out when more evidence turns up. As the evidence now stands, this theory accounts for some facts which have been puzzling us for the past twelve or fifteen years.

That there have been changes of plan in the construction of Mission San Jose de Tumacacori can be shown, we think, beyond the least question of a doubt. The evidence also points strongly to the fact that there was reconstruction after certain parts of the building had been erected; that is, not only was the plan itself apparently changed here and there before the actual construction of some parts of it had been effected, but certain changes of plan were made which entailed tearing out and rebuilding some portions of the structure. At some future date, after the publication in these pages of Mr. Beaubien's report on his excavations of 1935, an extensive report will probably be prepared which will cover a complete study of all these changes. Working, however, under our regular policy that as soon as we get a new theory or fact we might as well pass it along for criticism and suggestions, we are offering here one of the details which later may be more completely developed and incorporated in the study of all the changes which are indicated in the mission walls.

We believe that Mission San Jose de Tumacacori was under construction for many years longer than the present written records would indicate and was, as a matter of fact, never completed. The modern method of putting large gangs of expert workmen on a construction job and pushing it through to speedy completion was not in use in the old days at Tumacacori. This was due in part to the time and country. The men who worked on this job were undoubtedly drawn from the local community and must be allowed time off to attend to their own work, such as planting, handling and harvesting their crops. The work might also have been stopped at various times and for considerable periods by financial difficulties. The Apache Indians, with their constant menace of raids and forays, no doubt caused their share of delays. We can also turn to the experience of the California Missions where we find many of the present structures took from six to ten years in the building. This factor of an extended period of construction would account for revision of plans and changes in the work during the erection of the church such as might not occur in our present times, and we must, therefore, be willing to look for such changes and make allowance for them.

The present study deals with the right hand or east wall of the church as one enters the front door, and covers and distance from the

front wall some twenty-five feet to the north, and from the floor to the roof. The present condition of this wall is shown in Plate 2. The view is from the west side of the room looking east and shows the large buttress to the east of the entrance doorway at the right side of the picture. To the left of this buttress can be seen the entrance archway to the Baptistery and further to the left is the pilaster which once carried a choir loft arch. Above the archway to the Baptistery is a doorway opening from a second story passage in the tower on what was once the choir loft floor.

The choir loft arch was standing as late as 1889 and we have a picture of it taken that year from a point about under the triumphal arch at the front of the nave. Above and a little to the left of this pilaster will be seen a peculiar curved effect in the wall construction where the plaster has broken away enough to expose it. Closer inspection will show that this curve is roughly centered on the curve of the Baptistery archway. From the high point of this curve, a little below the choir loft doorway, a horizontal line can be seen running to the left and meeting a vertical line which falls vertically parallel to a tangent to the left end of the curve. This triangle, if you will pardon the slightly inaccurate expression, has been the source of hours of study, worry and conjecture on our part. It was originally filled with a grouting of lime mortar, stones and an occasional brick bat. About half of this filling has long ago broken away and disappeared, the remainder is still embedded in the wall. It is totally different from any of the wall construction near it and lies in what appears to have been a plain piece of wall. An examination of the opposite wall of the church discloses the same condition on that side although the plaster, being in a much better condition, covers most of the triangle.

Mr. Beaubien's report on his excavations of 1935 will disclose the plan of foundations which he discovered under the present floor of the church. (See Plate 1.) One of these foundations occurs on each side of the room directly under each of these triangles.

The facts as stated above caused us to begin this study on the possibilities of the church having had two choir lofts or having been planned for a choir loft which was never built, the plan having been changed to a smaller loft whose arch was still standing in 1889, and which we shall refer to hereafter as the "late loft."

We note that the foundations under the floor are adequate to support a much heavier choir loft arch than the late one. The indicated width of the old loft pilaster along the church wall, too, is much greater than the late pilaster. The indications are, then, that the old loft arch was heavier and that the pilaster was thicker from front to back and probably extended further from the wall than the late arch.

We believe the curved line on the wall will explain this for we

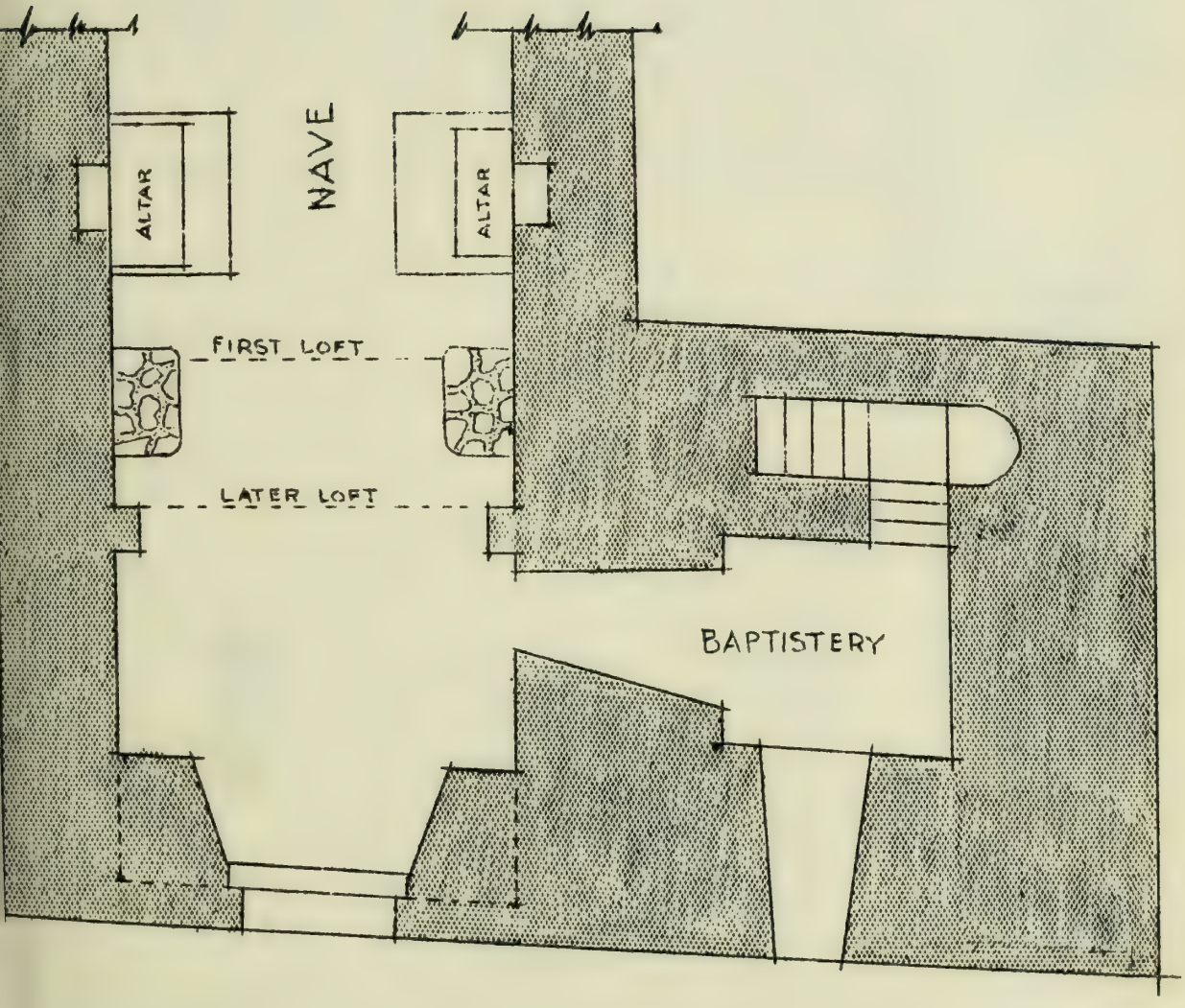


PLATE 1-PLAN.

Tov.



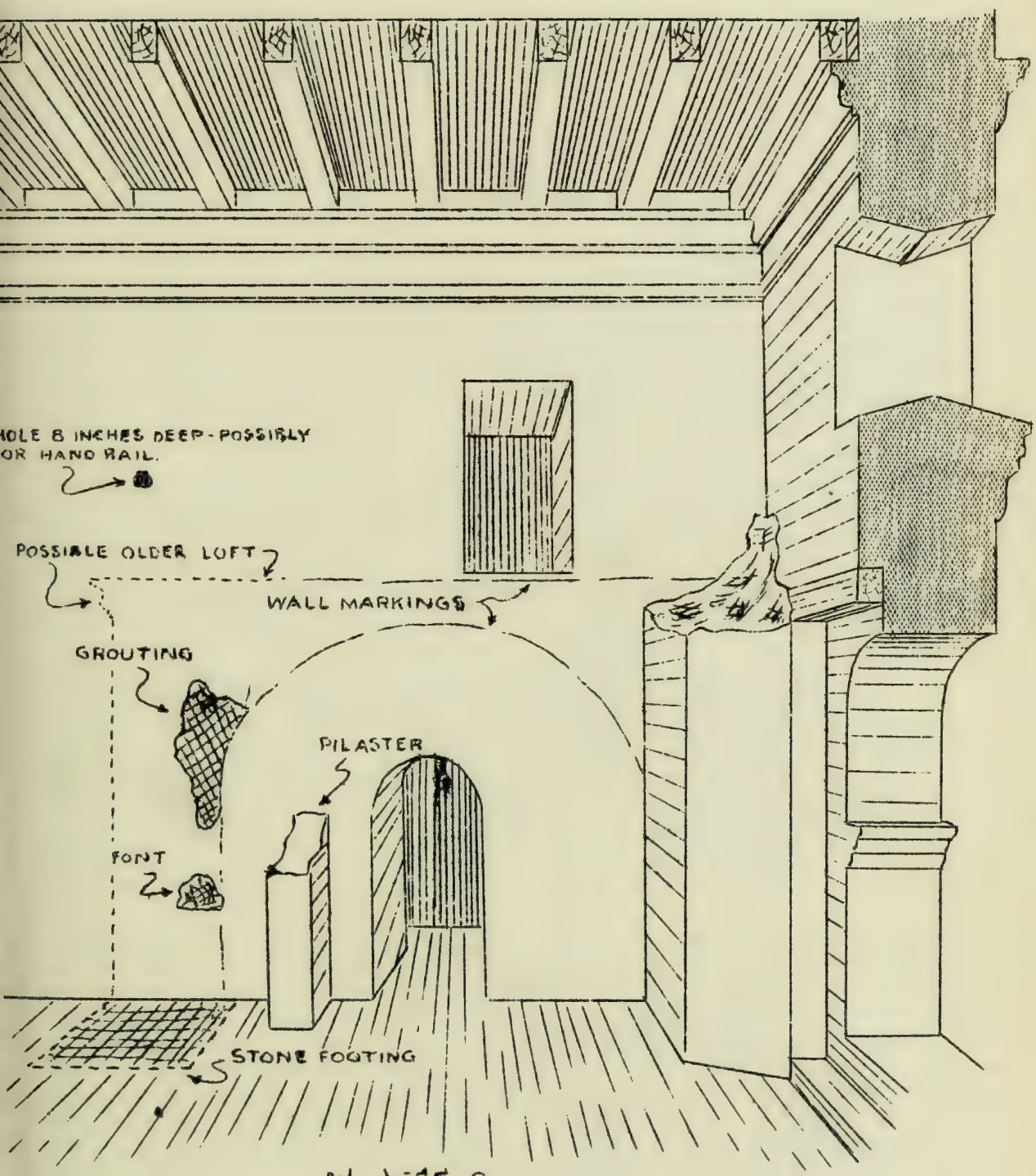


PLATE 2.

EAST WALL.

Tov.

Brigham Young University Harold B. Lee Library



think it indicates the line of vaulting of a groin vaulted choir loft. Groin vaulting would account for the extra thickness of the choir loft arch, because there would be a thrust against it and its thickness would help to keep it from overturning. This would also account for the two large buttresses in the south corners of the nave, for they would help to carry the thrust of the vaulting against the front wall of the church. Groin vaulting would likewise account for the grouting of lime mortar and stones remaining in the triangles in the walls of the church, for the vaults might have been formed of lumber and filled with the grouting, not unlike we would handle the job with concrete today, in which case the builders might have dug back into the church wall in order to give this grouting a chance to key into the wall, thus getting a better hold against the corner thrust. They might at the same time have keyed the grouting into the choir loft arch itself and when that arch was destroyed or taken down a section of this grouting fell out, accounting for the missing piece which is now gone from the church at the front of the loft.

It will be noted on the plan shown in Plate 1 that the axis of the passage into the Baptistery is not centered on the Baptistery. The inside end of the passage is centered on the axis of the Baptistery but the outside end is not centered between the present pilaster and the corner of the church, but is centered between the supposed older choir loft pilaster and the corner of the church as is shown in Plate 3. This, to us, is strong evidence for an older choir loft. It would be hard, with the labor then at hand, to build an arched passageway, keyed with adobe bricks, having a large arch at one end and diminishing to a small arch at the other. It would have been considerably harder to move the outer end of the passage a foot or more to the left and then bring the arched ceiling through, diminishing from a large end to a small end on that warped line. Yet they went to this extra amount of trouble and care. We think the desire to center the outer end of the passage on the center of the transverse vault of the choir loft while leaving the inside end centered on the axis of the Baptistery, is the only possible cause for this peculiarly shaped passageway.

Assuming that we have guessed the intent of the builders, the next question is, was it ever carried out? There is a possible theory that one builder planned a future reconstruction of the inside of his church when he should have better skilled workmen or more funds to make it possible and planted the two foundations and the two groutings in the wall for the future larger and heavier choir loft arch to rest against, covered them with his church floor and finish plaster and never afterward found the opportunity to use them. This would also entail his warping the passageway as described above and which would then not be symmetrical with the shorter choir loft which he would then build. We do not believe this theory but offer it here as one possibility.

Another theory would be that the longer and heavier choir loft was planned while the building was under way and the warped passage was

built to fit that plan; that the attempt at the groin vaulted arch failed and the padre, finding that he could not execute it because of lack of ski or funds, tore out the pilasters;left the foundations and groutings in the walls to puzzle us these hundred odd years later; gave up the groin vault entirely; moved his choir loft arch back to the right a few feet, thus decentering his Baptistery entrance; and, with a much lighter arch than was first planned, built a beamed floor in his choir loft. The pilasters of the later loft are not bonded to the walls which would check with this theory.

Another theory would be that the present walls are older than we think they are; that they are the walls which were unroofed in the raid of 1765 and re-roofed in 1781. This theory would suppose that the burning roof crashing in in 1765 bore down the groin vaulted choir loft; that in the reconstruction of 1781 they had not the means or skill to rebuild the vaulted loft and so, clearing away the debris of the old loft, they erected the new as their best effort.

This last theory in itself is a fine one, but we cannot square it with the entry in the burial record in 1822 where the transfer of the bodies of the two priests from the old church to the new, which would certainly indicate that the "new" church, which was still unfinished in 1822, could not have been the "old" church which was re-roofed in 1781.

We have asked Custodian Caywood to do some ring growth research on the headers of the various openings in the present church and see if we can get any time factor along that line of study.

In the meantime we are putting this problem of the choir loft of Tumacacori into the record on the evidence we have and leaving the question open to argument.



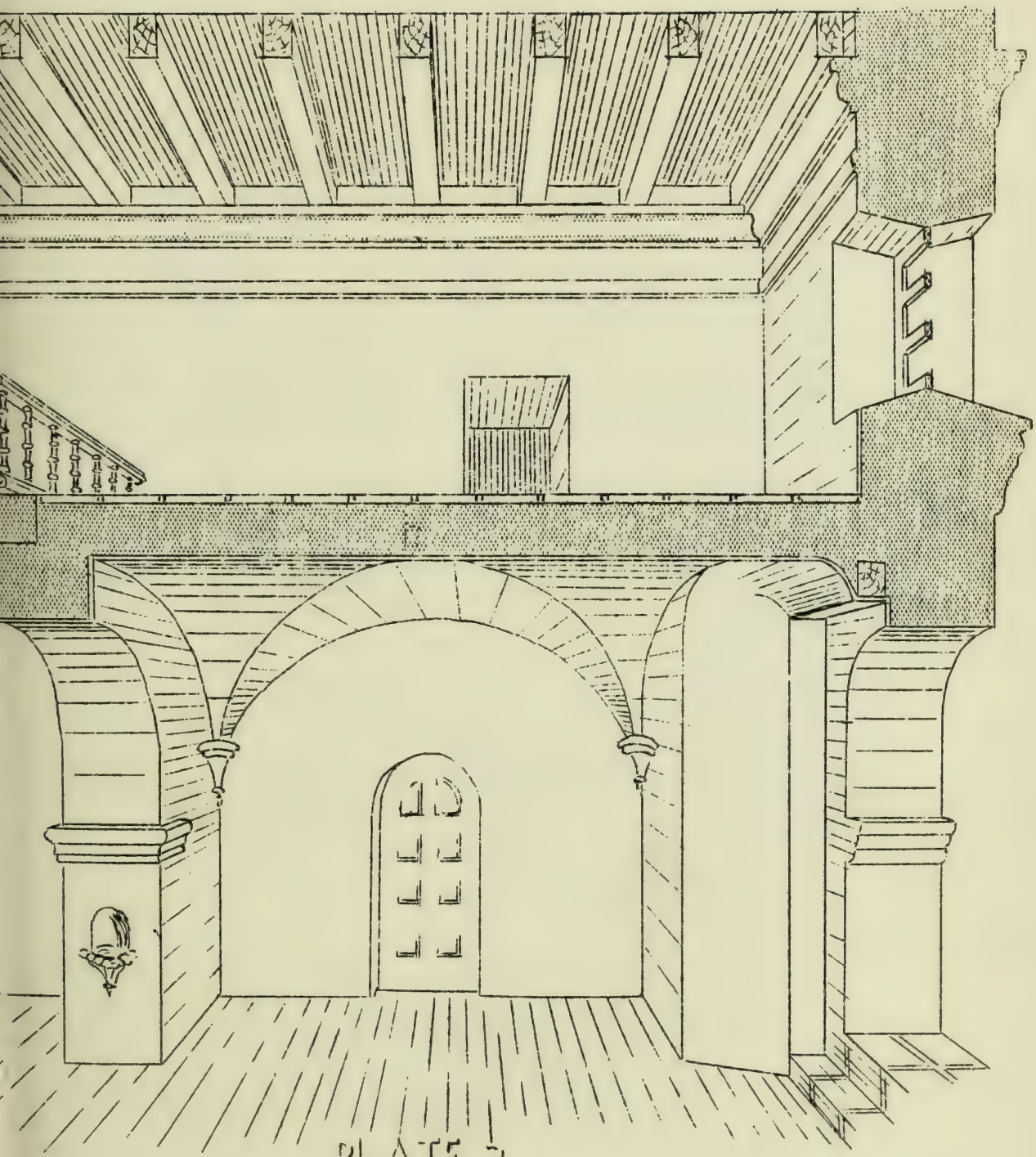


PLATE 3.

THEORETICAL GROIN VAULTED CHOIR LOFT

Tov.

INDEX

INTRODUCTION ..... Page 381
LOCATION AND EXTENT ..... Page 381
HISTORICAL ..... Page 382
PHYSIOGRAPHY ..... Page 383
CLIMATE ..... Page 383
VEGETATION AND ANIMAL LIFE ..... Page 385
GEOLOGY ..... Page 385
General ..... Page 385
Cambian ..... Page 386
Ordovician ..... Page 386
Silurian ..... Page 386
Devonian ..... Page 387
Carboniferous ..... Page 387
Triassic ..... Page 388
Cretaceous ..... Page 388
Quaternary ..... Page 388
Igneous Rocks ..... Page 389
Structure ..... Page 389
Geological History ..... Page 390
Fossils ..... Page 392
GYPSUM ..... Page 392
Saline Residues ..... Page 392
Varieties of Gypsum ..... Page 394
Origin of White Sands ..... Page 394
Movement of Sands Dunes ..... Page 398
ROAD BUILDING RECOMMENDED ..... Page 399
ACKNOWLEDGEMENTS ..... Page 399
BIBLIOGRAPHY (PARTIAL) ..... Page 399

PLATES:

II. Stratigraphy of Tularosa Basin
III. Representative Sections of Chupadera Formation in Tularosa Basin.
IV. Cross-sections of Tularosa Basin
V. Analyses of Water and Surface Materials from Alkali Lake

GEOLOGICAL REPORT ON WHITE SANDS NATIONAL MONUMENT

By Vincent W. Vandiver, Regional Geologist

INTRODUCTION

The White Sands National Monument is rapidly becoming one of the prime centers of interest among the Southwestern Monuments. It is estimated that approximately 34,000 people visited the area during the past year. I was informed that Mr. Gilbert Grosvenor, editor of the National Geographic Magazine, stated during his recent visit that he had observed three of the natural wonders of the world in the course of a few days; namely, Grand Canyon, the Carlsbad Caverns, and the White Sands. The inspirational features of the sands cannot be denied and this fact together with its being the only occurrence of gypsum sand in the world of much magnitude may eventually warrant the area being given consideration as a national park.

It is due to this increased interest in the White Sands and the fact that several theories have been advanced by geologists as to the source of the gypsum that I visited the area, in an effort to relate the best geological picture possible. There is considerable geological information in the literature on the Tularosa Basin and with this data at hand combined with the field studies made there appears to be little doubt as to the source of the main portions of the gypsum comprising the sands. Since only a short time was spent at the monument the following pages are necessarily largely a compilation, however, the data assembled is in the main from the publications of the United States Geological Survey and since this type of material was available there appeared little reason for spending time duplicating field studies completed previously.

LOCATION AND EXTENT

The Tularosa Basin, of which the National Monument is a part, lies between two of the most prominent mountain ranges of New Mexico, the San Andreas mountains on the west, and the Sacramento mountains on the east. This elongated synclinal basin is approximately 150 miles in length, has a minimum width of 60 miles, and covers an area of approximately 6,000 square miles. The most spectacular feature of the area is the granular gypsum comprising the White Sands, situated some 12 miles west of Alamogordo, in south central New Mexico.

Approach to the heart of the sands is over State Highway No. 3 which extends in a northeast-southwest direction connecting the towns of Alamogordo and Las Cruces. North-south U. S. Highway No. 80-85 to Albuquerque and El Paso is available at Las Cruces. U. S. Highway No. 54-70, running in the same general direction, may be had at Alamogordo for El Paso as well as points north. The Southern Pacific at Alamogordo is the nearest

approach by rail to the White Sands.

The deposit of gypsum is about 27 miles in length from north to south and averages around 10 miles in width, the greatest width being about 15 miles. (See Plate I for aerial extent.) Over 500 square miles are covered by the gypsum sands which probably average 50 feet or more in thickness. It has been estimated (8) that the deposit contains 15,000,000,000 tons by using 60 pounds to the cubic foot of gypsum, with much of the material containing no more than 2 or 3 per cent of impurity. It is interesting to note that the gypsum sands proper occupy only about 5 per cent of the total area of the Tularosa Basin.

The White Sands National Monument was created in January, 1933, and was formally opened to the public by Mr. Tom Charles, resident custodian, in April, 1934. The area comprised in the monument is 143,145.91 acres and negotiations are now being concluded for an extension to the southeast covering 1,640 acres, including a 200-acre lake, which is to be used primarily for a migratory bird refuge. The total area will therefore be approximately 225 square miles.

Roughly 40 per cent of the total deposit of gypsum in the basin is contained within the boundaries of the reserve area. On this basis and in consideration of the above estimate for the total amount of gypsum present there are 5,200,000,000 tons of almost pure gypsum within the monument leaving an estimate of 7,800,000,000 tons outside for public exploitation as desired. The average gypsum mined yearly in the United States for the five year period 1927-1931 amounted to approximately 4,300,000 tons (14). Should all sources be closed in this country and the consumption of gypsum required for domestic purposes be taken from the White Sands outside of the National Monument it is calculated that there is a supply available to meet the needs for over 1,800 years. Botkin (5) states that if all of the gypsum mines and mills in the United States were shut down for 1,000 years, a normal supply could be obtained in the sands' area outside of the monument.

HISTORIAL

The Tularosa Basin is rich in historical interest. The coming of the Spaniards in the sixteenth century and their contacts with the Pueblos and Apaches form many exciting chapters. The main route of travel in the early days was along the Rio Grande, the valley to the west, and that the desert, because of its lack of water and Apache depredations, made a deep impression upon the early travelers is certain since it was known as the Jornada del Muerto, or "Journey of the dead." Evidence still remains of the extension of the rule and religion of the Spaniards at Manzano and Gran Quivira. Gold placers and salt found in the alkali flats were early attractions to this area. Heavy wooden wheels of ox-carts and irons with which the oxen were shod have been observed along the old trails. The first real development in the area was the establish-

ment of Fort Stanton in 1835. The range wars of the 80's and the bloody events surrounding the activities of Billy the Kid all lend much to a fascinating historical picture.

PHYSIOGRAPHY

West of the Great Plains of New Mexico and Texas is a region of isolated mountain ranges with alternating plains or broad open valleys. The Pecos and Rio Grande rivers flow through several of these valleys, but in the region between these rivers there are valleys which are entirely inclosed by higher ground, thus having no drainage outlets. The Tularosa Basin, of which the White Sands is a part, is a typical example of such an inclosed basin.

A variety of topographic features occur in this elongated basin. Probably the most prominent to the average visitor are the buttes Cerrito Tularosa, a few miles southwest of the town of Tularosa, and Tres Hermanos Peaks, near the southeast boundary of the monument. Fault scarps and innumerable shore line features are in evidence. Stream built slopes, terraces, alkali flats and an enormous exposition of dune building all contribute much to the attractions of the area to the observing person. In addition, along the northern portion of the basin are volcanoes and lava beds of intense interest and scientific importance.

Generally speaking the reserve within the boundaries of the National Monument consists of equal areas of gypsum sand dunes and alkali flats. In the southwestern portion there is an alkali lake covering six or eight square miles. The majestic peaks of the San Andreas and Sacramento Mountains, which limit the basin on the west and east respectively, rise to elevations of over 9,000 feet above sea level. The almost sheer vertical wall extending along the flanks of these mountains drops most abruptly in elevation for a distance of almost a mile to the plain level of the valley floor. The lowest altitude is in the vicinity of Lucero Lake with an elevation of around 3,000 feet above sea level.

CLIMATE

Meinzer (1) states that the climate of the Tularosa Basin is typical of the arid southwest. Generally the sky is clear and the atmosphere is dry and rare. In the main for both summer and winter the days are warm and the nights cool. Most of the rain is produced by condensation from local ascending currents of air and accordingly falls in a few heavy storms in midsummer.

The basin has a wide range of temperature, owing partly to differences of latitude, but chiefly to differences in altitude. The United States Weather Bureau reports that Alamogordo, with an elevation of 4,338 feet, had a maximum temperature over a period of nine years of 109°, a minimum temperature of 0° and an average annual temperature of

61°. These figures are in contrast to those of Cloudcroft with an elevation of 8,650 feet. Averages over a period of seven years for this point indicate a maximum of 83°, a minimum of -10° and an annual average of 43.2°.

Of considerable interest are the maximum and minimum temperatures taken in the sands area during April and July by Emerson (11) and have been recorded as follows:

Table I. Maximum and Minimum Temperatures

Dates	Position	Maximum °F.	Minimum °F.	Temp. Range °F.
April 2	Air	78	44	34
April 3	6" in Sand	56	48	8
April 4	Air	74	36	38
July 2	Air	100	58	42

As a supplement to these records comparative temperatures of sand and air were taken in both the alkali flat and the dunes on July 1 with the following results:

Table II. Temperatures in dunes and alkali flat in mid-summer

Location	Hour	Air °F.	In sun; on sand °F.	1 In. deep °F.	7 In. deep °F.
Alkali Flat	10:00 a.m.	93	108	93	77
Dunes	4:30 p.m.	99	108	99	81

Meinzer (1) summarizes the records of precipitation as follows: In the interior plain south of the lava bed the average annual precipitation is probably less than ten inches; near the margins of the plain it is approximately ten inches; in the mountain chain on the east side it increases with altitude, and near the crests of the highest ranges it exceeds 20 inches; in the mountain chain on the west side it also increases with the altitude but is on the average less than in the mountains to the east. The principal rainy season is in mid-summer, generally beginning near the close of June or in the first half of July and continuing into September. From 55 to 60 per cent of the precipitation occurs during this period.

The prevailing southwest winds are an important factor in the present location of the sands. Much has been written about the movement of the dunes in a northeast direction and one writer at least has gone so far as to estimate the date at which the gypsum sands will encroach upon the towns of Alamogordo and Tularosa. Unless one visits the area during one of their periodic dust storms it is difficult to appreciate the tremendous abrasive effects of the powerful wind currents and the enormous amounts of material carried in this manner.

VEGETATION AND ANIMAL LIFE

Studies of the vegetation of the White Sands were made in the spring and summer of 1934 by Emerson (11) and a summary of his findings are as follows:

2. Plants seem to be in the process of migrating from outisde sources into the dunes with the possible exceptions of two endemics that may have originated within the area. Some species have entered only a short distance while others have migrated several miles.

2. No seedlings establish themselves except in the flats, between the moving dunes.

3. In the flats soil water is near the surface, the water table being between 2 and 3 feet deep with moist sand reaching almost to the surface.

4. Roots must absorb water from a saturated solution of calcium sulphate.

5. Even in the most luxuriant stands of plants there is a very slight concentration of nitrates and nitrites, thus raising the question of methods of nitrogen assimilation.

6. Seven species have the power to grow upward rapidly enough to survive encroaching sand. All of these produce adventitious roots when covered. At least 55 species are limited to the flats because they cannot elongate when covered.

The white color adaptation of the limited animal life of the White Sands presents an interesting story for study by the zoologist.

GEOLOGY

General

The sedimentary rocks of the Tularosa Basin consist of deposits of Cambrian, Ordovician, Silurian, Devonian, Mississippian, Pennsylvanian, Permian, Triassic, Cretaceous and Quaternary. Formations are present representing all ages of the Paleozoic sequence. (see Plate II). Igneous rocks are in evidence in widespread outcrops along the east flank of the San Andreas mountains and to a lesser degree along the west escarpment of the Sacramento mountains. They consist of pre-Cambrian granites and schists. Tertiary dikes and sills occur in isolated localities. Two lava flows of Quaternary age are a prominent feature in the northern part of the basin.

Cambrian

The basal formation of the Paleomoic in southern New Mexico is known as the Bliss sandstone of Upper Cambrian age. From the type locality in the Franklin mountains of Texas the formation things out and is only six feet in thickness in the northern portion of the San Andreas Mountains. In the southern portion of this range the thickness averages around 100 feet. The limited exposure in the Sacramento Mountains shows a few feet of sandstone separating the granite from the El Paso limestone above. In the main it is a gray to brown sandstone, in part quartzitic, with upper slabby members in part glauconitic. The formation is unconformable on the granite or schist and grades into the El Paso limestone above.

Ordovician

The strata of this age is composed of the El Paso limestone, of Lower Ordovician, and the Montoya limestone of Upper Ordovician age. The El Paso limestone grades downward into the Bliss sandstone but is separated from the Montoya limestone by a break in sedimentation, representing Middle Ordovician time.

The El Paso limestone forms a prominent outcrop along the east front of the San Andreas mountains, where it is 300 feet in thickness in the southern part, decreasing to around 150 feet in the northern part of the range. It is a massive gray limestone, slabby in part, and containing considerable sand in the lower portions. Fossils are scarce.

The Montoya limestone is variable in thickness due to erosion and thins out in the southern part of the Oscura Mountains. In the San Andreas it consists of two members, an upper member containing alternating thin beds of limestone and chart, from 50 to 75 feet in thickness; and a lower member of dark massive limestone around 100 feet in thickness. Locally there is present a basal deposit of sandstone. In the Sacramento Mountains, southeast of Alamogordo, the two members mentioned above have been observed. Richmond fauna (Upper Ordovician) are present throughout the upper member.

Silurian

A small part of Silurian time is represented by the Fussalman limestone containing fossils of Niagara age. It ranges upward to around 200 feet in thickness in the San Andreas range and rests with an erosional unconformity on the Montoya limestone. Generally two members are present, an upper bed of hard dark massive limestone, and a lower bed of compact fine-grained limestone.

Sedimentary formations in the Tularosa Basin and Adjoining Ridges

AGE	FORMATION	CHARACTER	THICKNESS FT
QUATERNARY	Wind blown deposit	Gypsum sands, dust and quartz sands.	0 to 50' Ave.
	Stream deposits and other valley fill.	Chiefly red clay, gypsum, sand and gravel	100-1000 +
UPPER CRETACEOUS	Mesa Verde (?) formation	Sandstone and shale, coal bearing.	630
	Mancos (?) shale	Shale; some sandstone; limestone in lower part.	900
	Dakota (?) sandstone	Sandstone, massive, hard, gray to buff.	150
TRIASSIC		Red sandy shales with layers of brown sandstones and limy concretions.	340
PERMIAN*	Chupadera formation	Upper part limestone and gray sandstone; lower part gypsum, soft red sandstone, then limestone and gypsum	1200-1600
	Abo sandstone	Brown red sandstone and red sandy shales; thins towards the south	500-900
PENNSYLVANIAN	Magdalena group	Limestone with beds of shale and sandstone; several sandstone beds in lower part.	2200-2500
MISSISSIPPIAN	Lake Valley Ls.	Coarsely crystalline limestone and limy shale.	0-150
DEVONIAN	Percha shale	Gray shale	0-125
SILURIAN	Fusselman Ls.	Limestone, massive, dark above weathers white below.	0-200
ORDOVICIAN	Montoya Ls.	Massive limestone, cherty above, dark below, sandy at base.	0-200
	El Paso Ls.	Limestone; weathers light gray: slabby in part.	0-350
CAMBRIAN	BLISS Sandstone	Sandstone, massive, gray	0-125
PRE-CAMBRIAN		Granites and schists	

*The two formations of the Permian in this area comprise the Manzano Group.

Note: The stratigraphy as above indicated is from Winchester (9) with slight additions.

Devonian

A widespread deposit of black shale, known as the Percha shale, of late Devonian age, is present in southern New Mexico. Breaks in sedimentation separate it from the overlying and underlying formations. The formation consists of lower beds of fissile shales and upper beds of gray shale containing some lirr beds with many fossils. These shales thin out in the northern part of the San Andreas mountains. They range in thickness upward to 125 feet.

Carboniferous System

It is the rocks of this system which we are primarily concerned since they contain thick beds of gypsum. They are widespread in this region occupying all parts of New Mexico except the higher portions of some of the uplifts, and here they have been removed by erosion.

Mississippian

The thick succession of limestones of the Magdalena group forms a prominent outcrop in the Sacramento and San Andreas Mountains. It is predominantly limestones, but interbedded sandstones and shales are present in all sections. In this area the thickness ranges upward to 2,500 feet. Locally the group may be divided into several formations, some apparently separated by unconformities, although as yet no faunal distinctions have been observed. In nearly all localities fossils occur in abundance.

Permian

The Permian is represented in the Tularosa Basin by the Manzano group comprising a thick succession with the lower member known as the Abo sandstone and the upper member represented by the Chupadera formation.

The Abo sandstone is made up of red beds of sandstone and sandy shale and ranges in thickness from 500 to 900 feet. The formation thins out in the southward extension of the Sacramento range and the Chupedera and Magdalena formations join in this direction in the vicinity of the Hueco Mountains. The Abo sandstone is apparently unconformable with the underlying Magdalena. In the western part of the state there are thin limestone beds near the base which have yielded fossils establishing the age of the formation as Permian. It is considered to be the equivalent of the Supai formation of the Grand Canyon section.

The Chupadera formation, so named from the Chupadera mesa in eastern Socorro county, is the uppermost formation of the Manzano group. It is generally separable into two members, the San Andreas limestone above and the Yeso formation below. These thick limestone beds with interbedded

deposits of gypsum and anhydrite attain thicknesses of 2,500 feet on the east slope of the Sacramento Mountains and this thickness is even greater to the south. It is from 1,200 to 1,600 feet thick in the Tularosa area.

The San Andreas limestone contains not only limestone but gray sandstones as well and to the south deposits of gypsum, anhydrite and salt, which become very thick in the south-central and southeastern sections of the state.

Representative sections of the Chupadera formation as indicated by Darton (3) are shown on the following plate III. The large amounts of gypsum present in this formation may be observed and this is a significant factor in any study of the White Sands. Many fossils are present in the Chupadera, which was originally regarded as late Pennsylvanian in age, but is now classed as Permian.

Triassic

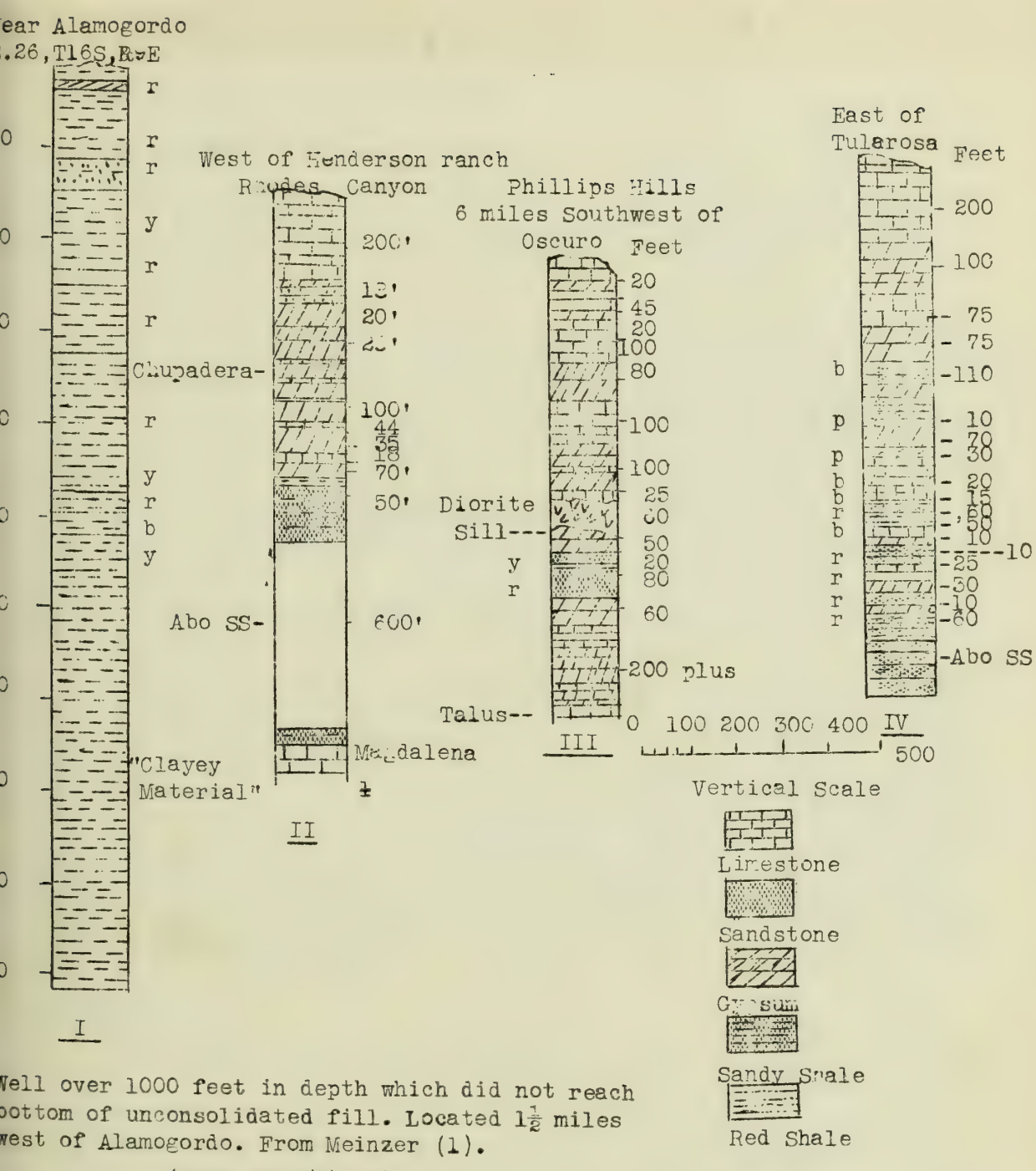
The southern limit of the Triassic rocks in south-central New Mexico is not known. They have been traced southward to the vicinity of Tularosa but are absent under the Cretaceous outcrops 10 miles north of Organ. Thicknesses have been measured ranging upward to 340 feet in the Tularosa Basin. They are composed of red sandy shales with layers of brown sandstone and limy concretions.

Cretaceous

Outcrops of Cretaceous strata are present in the northeast portion of the basin, extending northward from Three Rivers, east of the lava flows. It is not unlikely that the Cretaceous underlies at least a portion of the basin to the south. Three formations have been tentatively identified as follows: The Dakota (?) sandstone, Mancos (?) shale and the Mesa Verde (?) formation. A maximum of almost 1,700 feet of Cretaceous section is exposed, composed of gray sandstone in the lower part, shale with some sandstone and limestone, followed above with sandstone and shale containing coal beds.

Quaternary

Sediments of this age are divided by Meinzer (1) into two groups, the Pleistocene and Recent. They consist of valley fill material and range upward to over 1,000 feet in thickness. The Pleistocene was deposited chiefly by streams, lakes and underground waters. It consists chiefly of red clay, gypsum, gravel and other sediments on the slopes. Gypsum was deposited at low levels, adobe clay at intermediate levels, and gravel and clay at high levels, with wind-blown gypsum and quartz sand present locally. Recent sediments consist of dunes deposited by the wind and consisting of gypsum sands and dust together with quartz



Well over 1000 feet in depth which did not reach bottom of unconsolidated fill. Located 1½ miles west of Alamogordo. From Meinzer (1).

(From Darton) (8)

Representative section west of the Henderson ranch in the southern part of T12S.

Columnar sections of the Chupadera formation southwest of Oscuro.

Columnar section of the Chupadera east of Tularosa.

g-Gray
r-Red
y-Yellow
b-Brown
p-Pink

PLATE III

sands.

Igneous Rocks

Pre-Cambrian granites may be observed in an almost continuous band along the foothills of the San Andreas Mountains. Minor outcrops of granite are present at the base of the western escarpment of the Sacramento Mountains.

Two beds of Quaternary basalt occupy the basin west of Carrisozo. Both beds form thin sheets, probably less than 100 feet in average thickness, but in the vicinity of the craters they are several hundred feet thick. The lava came from a crater in Township 6 South, Range 10 East, and flowed south for a distance of about 50 miles. The flows consist of basalt of similar appearance and like composition. They are mainly black but locally reddish or brownish. The bulk of the lava flowed some distance before solidifying, lost most of its gases, became relatively compact, though its vesicular texture near the surface, shows that it cooled before all of the gas bubbles escaped. It is likely that the lava and cones were erupted along fracture planes which had produced zones of weakness in the strata.

Meinzer (1) states that the younger lava flowed out upon the main body of valley fill (Pleistocene) and that it is clearly of less age than all except the most recently deposited parts of the fill. It was therefore erupted either in Recent time or very near the close of the Pleistocene. The older lava has been in existence several times as long as the younger but is much younger than the basin itself or the oldest valley fill. It was probably erupted late in the Pleistocene. The age of the younger basalt is at least several hundred years, but in all probability not more than a few thousand years; the age of the older basalt is probably at least a few thousand years and is perhaps several tens ofthousands of years.

Structure

The regional structure of the Tularosa Basin is probably synclinal although most of the surface is covered by sand, lava and wash with critical data available only along the margins or from scattered well records in the interior. Cross sections on Plate IV by Darton (8) illustrate the structural features in so far as they are known. A hypothstical section across the basin by Meinzer (1) is also shown on this plate. Minor anticlinal structures are no doubt present in this large syncline. The San Andreas Mountains form a huge anticlinal uplift broken on the east flank by extensive faulting. The Sacramento Mountains have likewise undergone considerable faulting but principally along the west flank. The dominant feature or the prominent western escarpment is due in the main to an anticline, faulted in its higher portions, rather than to major faulting which is in evidence along the San Andreas scarp. The primary consideration in the structure of the Tularosa Basin is that it

is a large down faulted block between the San Andreas and Sacramento Mountains which gave rise to an inclosed basin, without drainage outlet, thus forming an ideal reservoir for the concentration of saline residues and the resultant gypsum sands.

GEOLOGICAL HISTORY

The Paleozoic (formations of Cambrian to Permian inclusive) deposition was preceded by a long era of erosion in which great thicknesses of rocks were removed exposing the granites of pre-Cambrian age. Generally the region was worn down to a level country. Quartzites are present to the north and south indicating the presence of clastic beds which at one time covered the granites. This long period of erosion marks the widespread unconformity upon which the Paleozoic sequence was deposited.

Paleozoic formations of New Mexico include the lower part of a series of various kinds of sedimentary rocks which have been upturned along the flanks of the southern extension of the Rocky Mountains. They also form in some instances extensive plain and plateau areas. The close of the Paleozoic is likewise marked by a widespread unconformity, although the lithelogic variation of succeeding formations is not great, there is a distinct break in faunal characteristics distinguishing these sediments from those of the overlying Mesozoic strata.

Our principal concern is with the Permian, which marks the close of the Paleozoic, since the Chupadera formation of this period contains the thick deposits of gypsum and is generally regarded as the original source of the gypsum contained in the present sand dunes.

Western Texas and southern New Mexico contain one of the greatest sections of marine Permian known in North America if not in the world. Interior shallow seas from the Gulf of Mexico entered across this region extending over western Oklahoma and most of Kansas as well. Great deltas later restricted the waters of this large embayment and in their retreat they remained longer in southern New Mexico and western Texas than in the central portion of the continent. Thus, the Permian in this region attains a maximum thickness of over 7,000 feet. The gradual retreat of the sea with its intervening advances resulted in the deposition of great thicknesses of limestones in which was laid down thick layers of salt and gypsum. Evidence prevails that the area gradually became so arid, with evaporation exceeding precipitation, resulting in a vast dead sea eventually covering the central portion of the basin. During the Permian and the period following, the Triassic, desert conditions were probably more widespread than at any other time other than the present. Salt beds extend from Kansas to New Mexico and it has been estimated that they contain 30,000 billion tons of salt and would require the evaporation of more than 22,000 cubic miles of sea water with a salinity like that of the modern ocean.

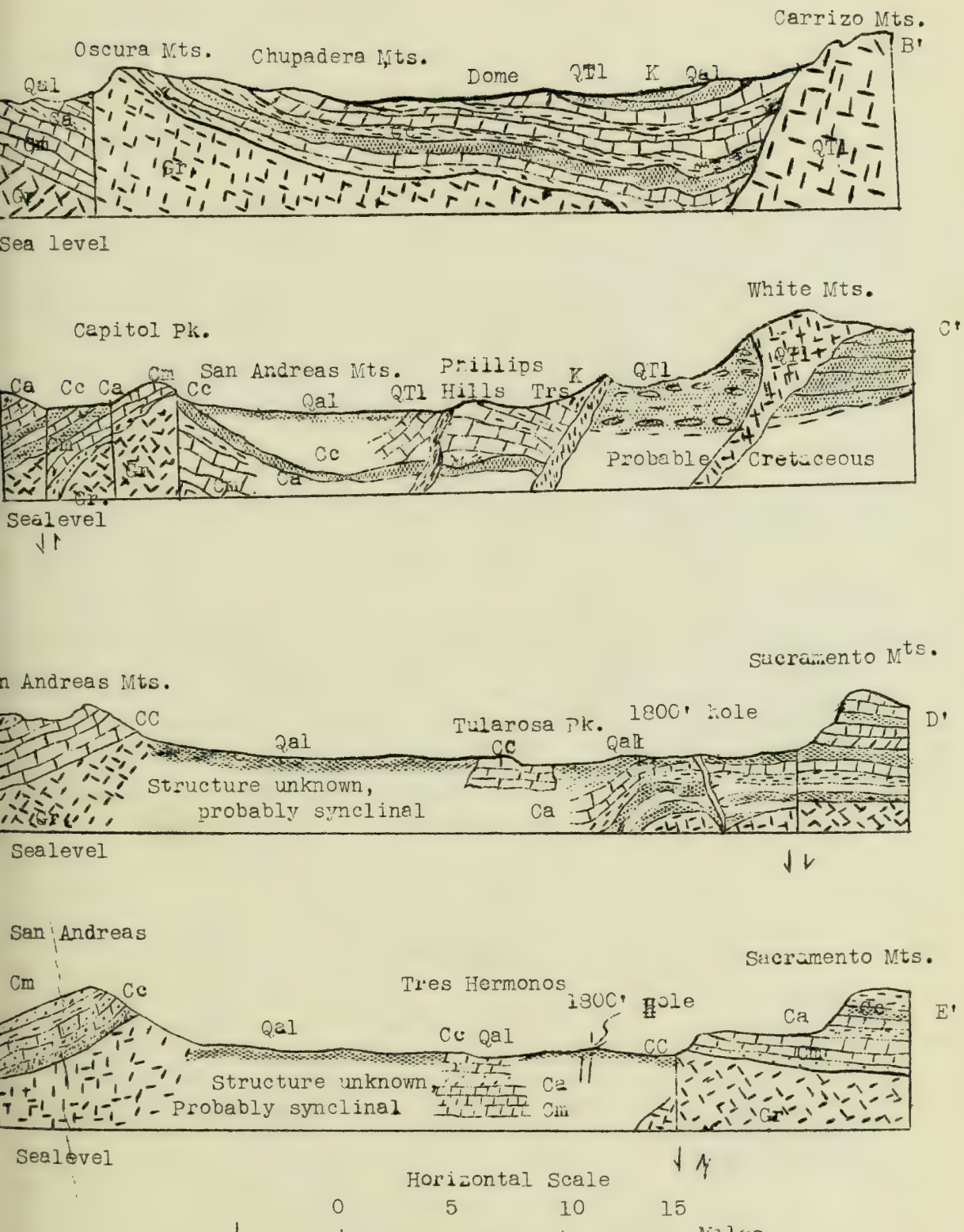
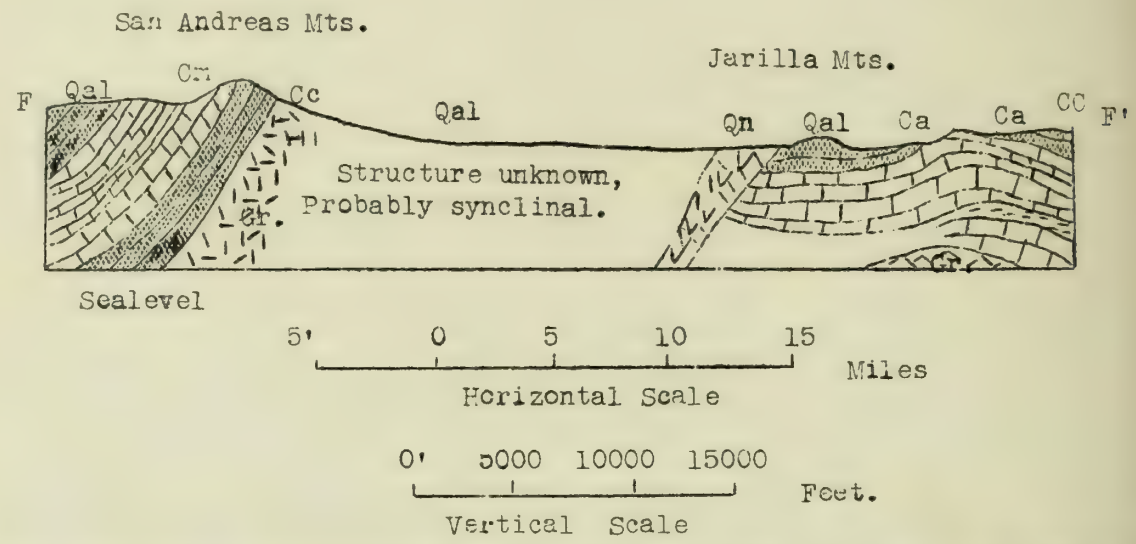

Carrizo Mts.
B'
Oscura Mts.
Chupadera Mts.
Dome
QTl
K
Qal
Qal
Ca
Cm
Gr
QTl
Sea level
White Mts.
Capitol Pk.
C'
Ca
Cc Ca
Cm
Cc
San Andreas Mts.
Qal
QTl
Phillips Hills
Trs
K
QTl
Cc
Ca
Probable Cretaceous
Gr
Sealevel
Sacramento Mts.
n Andreas Mts.
CC
Qal
Tularosa Pk.
CC
1800' hole
Qal
D'
Structure unknown,
probably synclinal
Ca
Sealevel
San Andreas
Sacramento Mts.
Cm
Cc
Tres Hermonos
1800' Hole
Qal
Cc Qal
CC
Ca
E'
Structure unknown,
Probably synclinal
Ca
Cm
Gr
Sealevel
Horizontal Scale
0
5
10
15
Miles

PLATE IV



Sections across Tularosa Basin and Chupadera Mesa. B, from north end of O
Mts to Carrizo Pk; C, thru Capitol Pk., San Andreas Mts. to Sierra Blanca of
White Mts; D, from San Andreas Mts east thru Tularosa Pk; E, thru Lake Lucer
and Tres Hermanos Butte; F, east from the south end of the San Andreas Mts.
the northern part of the Jarilla Mts. QTl, Porphyries; Cc, Chupadera format
Ca, Abo Sandstone; Cm, Lake Valley and Magdalena limestones; CC, Bliss sands
El Paso, Montoya, and Fusselman limestones and Percha shale. From Darton (8

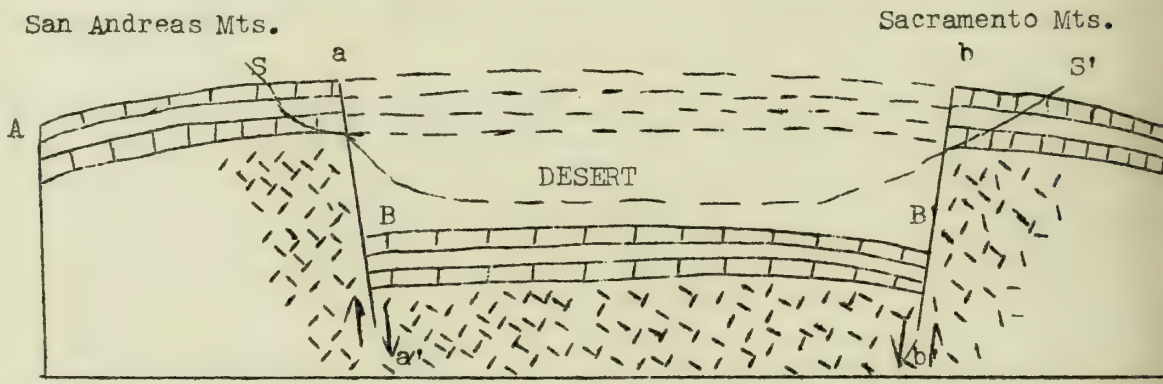


Diagram showing hypothetical structure of the San Andreas-Sacramento sec
AA', including the broken lines, shows original structure of the arch; BB',
sent position of keystone part of the arch; aa' and bb' fault planes. Arro
show direction of movement; SS', present surface. From Meinzer (1).

PLATE IV CONTINUED

As the basin was finally filled to sea level, streams converged in the low lands, depositing hundreds of feet of red mud and sands. There are occasional zones of gypsum present in the red beds which are evidence of a temporary return of marine waters and of partial evaporation at least.

It is believed that a connection was maintained with the marine waters of the Gulf through most of the permian and that additional salt waters were supplied to the lagonnal areas as evaporation proceeded in depositing the saline residues. Such a supposition is almost imperative since Twenhofel (15) states that to precipitate a ten-foot bed of gypsum over the entire extent of a basin, water to a depth of 14,000 feet would be required. It would seem very improbable that waters of a basin so deep ever reached the degree of concentration that they deposited gypsum, and that upon consideration of the immense thicknesses of gypsum and salt beds, it becomes obvious that exceptional conditions made them possible. A thickness of 1,200 feet of anhydrite in a west Texas well may be used to illustrate the time element involved in deposits of this type. The anhydrite contained banded layers apparently marking seasonal deposition and suggests that from 150,000 to 300,000 years were required to form same.

The great Appalachian Mountain chain was formed during Late Paleozoic with the culminating movements occurring during the Permian. The important points to bear in mind in connection with the history of the Permian in southern New Mexico is the existence of a shallow sea in Early Permian, the partial inclosure and breaking up of this sea into lagonnal areas which produced larged saline deposits, and finally the deposition of the red beds by streams in shallow lakes over large sections.

Permian history is of much importance to the National Park Service in the southwest. The Carlsbad Caverns have been formed in limestone of this age. Kaibab limestone of the Permian forms the rim rock at Grand Canyon. Dune sands of the Permian make up the Coconino formation as exposed in Walnut Canyon and the erosional features of the Kaibab limestone above formed ideal homes for the cliff-dwellers. Gypsum formed during this period has now come to rest, or perhaps rather to migrate, in the beautiful White Sands.

In the Tularosa Basin area sediments of the Triassic and Cretaceous of the Mesozoic era were deposited on the Permian. They consist mainly of shales and sandstones and are widely distributed in the Rocky Mountains. At or near the close of the Cretaceous the great mountain making movements of the Rockies took place. The rocks were broken and faulted and the region generally was raised above the water. The basin began to assume a more definite character. During successive periods erosion on a large scale tended to reduce the ranges to a peneplain. Great thicknesses of Mesozoic and Carboniferous strata were removed. A regional upwarp during late Cenozoic (probably Pliocene) has given

the Rockies their present height and the differential erosion of the uplifted peneplain has brought about most of their rugged relief.

Above the Cretaceous in this area are the loosely consolidated sediments of the Quaternary. Valley fill deposits over 1,000 feet in thickness have been deposited by streams, lakes and underground waters. Much gypsum was certainly carried down from the overlying formations and concentrated in the inclosed Tularosa Basin. Saline residues were thus deposited, redissolved and redeposited over and over again, even up to the present this process is going on. The most recent deposit is the gypsum sand dunes which have been formed through the action of wind on the concentrations of this material in the alkali lake area.

Fossils

Fossil bones and teeth of a mammoth are said to have been found in Section 28, Township 14 South, Range 6 East. I visited the locality but was unable to find anything but some fragmentary bones. It would probably be well to later work over the entire alkali flat and along Salt Wash in an effort to determine if important fossil remains are present. If such is the case a connection might be made with the present monument area in order to include the fossil exhibit. The intervening land so far as is known at present is worthless.

What I have termed the external molds of plants are plentiful in the White Sands. My interpretation of this process, which I am not at all sure is correct, is that the gypsum crystallized around the plant forms and adhered to the structure and became more or less hardened, the organiz material of the plant decayed leaving an internal core, thus forming the external molds now visible in the sands. Samples of this material have been forwarded the Washington office. These molds as I have termed them are to be sure very recent and in fact are being formed at the present time. They will make an interesting exhibit for the future museum of the White Sands.

GYPSUM

The evidence points, according to the writer's belief, that the original gypsum and salt deposits of the Chupadera formation are derived from precipitation in bodies of water, cut off from the sea or in embayment areas extending landward, or lakes or playas, with successive replenishment by waters flowing into same and consequent evaporation. Factors are present which indicate that in most cases such substances are precipitated under arid conditions. That evaporation takes place at a powerful rate in such areas is evidenced by the fact that 28 inches of water has been taken from the alkali lake during the month of July by this process.

Saline Residues

ANALYSES OF WATERS

	LAKE		NORTH OF FLATS	
	N. W. PART (Surface)	SOUTH SIDE (10' Hole)	NEAR SURFACE	NEAR SURFACE
	%	%	%	%
Total soluble matter	9.50			
Calcium (Ca)	.07	.06		
Magnesium (Mg)	.52	.08	1.22	2.46
Sodium (Na & K)	2.29	1.88	9.88	7.62
Carbonate (CO_3)	.01	.02		
Sulfate (SO_4)	2.54	1.76	2.87	4.25
Chloride (C_l)	3.29	.94	16.82	15.78

ANALYSES OF SURFACE MATERIAL

	LAKE EDDY PROSPECT (Surface)	FLAT AT NORTH END (Surface)	FLAT AT NORTH END (1-5 Feet)
	%	%	%
Total Soluble Matter	62.95	4.78	3.16
Calcium (Ca)	.49	.34	.12
Magnesium (Mg)	.40	.05	.03
Sodium (Na & K)	18.43	1.23	1.00
Carbonate (CO_3)	.02	.01	.01
Sulfate (SO_4)	40.27	1.27	.65
Chloride (C_l)	.60	1.72	1.35

Note: Tables are from Meinzer (1).

PLATE V

Some of the most important substances termed as saline residues are rock salt, gypsum and anhydrite. As water is evaporated the salts are precipitated and deposited. The least soluable salts are naturally precipitated first and these would include calcium carbonate and iron oxide if present. Gypsum separation follows and it is sually associated with anhydrite deposition. Sodium chloride (or common salt) is precipitated after the gypsum and following the bitter salts of sulphates and chlorides of potassium and magnesium, which are usually among the last to separate out of solution. The latter are so soluble that they are not always deposited when salt and gypsum are formed. It has also been observed that whenever these saline residues are precipitated they are likely to be redissolved unless they are protected against solution by water. When they are preserved muds and clays often form an impervious cover which serves as a means of protection.

Twenhofel (15) states that the chief processes involved in the formation of these saline residues is the evaporation of water in which constituent materials are dissolved, although some of them, as gypsum, may be precipitated by chemical reactions without evaporation, and some occurrences have resulted from the freezing of water. In some instances they are also formed through replacement of other substances, gypsum replacing limestone probably being the most common example. Also that so far as these substances are the result of the evaporation of water they develop either through the evaporation of sea water, the waters of lakes and playas, or of waters brought to the surface by springs or capillary action.

Saline residues commonly present in the lower portions of the Tularosa Basin, or the alkali flats, are sodium chloride (common salt), sodium sulphate (glauber salt, also called "ice" and erroneously called "soda"), magnesium sulphate (epsom salt), sodium bicarbonato (baking soda), sodium carbonate (washing soda), calcium sulphate (gypsum), and calcium carbonate (limestone). Plate V on a following page taken from Meinzer (1), shows the composition of water from the narrow portion of the lake and from a ten-foot hole on the south side; also, of the surface material at the Eddy soda prospect; and similar data on waters and soil at the head of the alkali flat about 35 miles further north. There is evidently a larger ratio of chlorides to sulfstes in both the waters and the surface materials at the north end of the flat than in the lower lake region. Possibly this may be accounted for by the fact that the drainage is in this direction and precipitation dies out to the south.

It is generally agreed that in humid regions soluble substances, which may be formed by the weathering of rocks, are quickly washed out of the soil passing into the drainage system and finally carried to the sea. In arid regions there is not sufficient rainfall to perform this function and in the case of an inclosed basin it would not be possible. The salts therefore remain in the soil, at times of rainfall they are dissolved into solution, and in times of dryness when water draws to

the surface, or is evaporated they are left, forring the white incrustation-son the soil known as alkali, a common feature of the lower sections of the Tularosa Basin.

Varieties of Gypsum

Gypsum ($CaSO_4 . 2H_2O$) occurs in several different forms. There is the amorphous or microcrystalline variety which includes anhydrite and is commonly known as rock gypsum or alabaster. This is the type that frequently occurs in thick beds. The microcrystalline variety of gypsum is known as selenite. It commonly occurs as individual crystals in clays and as veins and bands in the clay beds associated with rock gypsum. Gypsite is an earthy form of gypsum. Satinspar, a variety with fibrous structure, is commonly found in veins, but is not present in the White Sands area.

Anhydrite is an anhydrous calcium sulphate, $CaSO_4$, containing sulphur trioxide 58.8 and lime 41.2. Crystals are rare but when observed are thick tabular and of the orthorombic system. It is characterized chiefly by its cleavage which is in three directions at right angles to each other. The hardness is 3-3½ and specific gravity is 2.9.

The hydrous calcium sulphate known as selenite, $CaSO_4.2H_2O$, is composed of sulphur trioxide 46.6, lime 32.5, and water 20.9. It occurs in tabular or diamond-shaped crystals of the Monoclinic system. There is cleavage in three directions and with a hardness of 2 it may be scratched with the finger nail. Specific gravity is 2.32. Luster is usually vitreous, sometimes silky. Ordinarily its color is white, gray; sometimes various shades of yellow, red, brown, etc., from impurities. This variety occurs along the west side of the lower alkali lake in great profusion. Various crystals were observed more than a foot in length and this probably represents the average although Talmage (6) mentions crystals reaching a maximum length exceeding four feet.

Gypsite is a massive granular earthy form of gypsum containing impurities. There is a belt of gypsite hills to the west of the White Sands proper. They appear to be old dunes that have been compacted and cemented through the action of water. Satin spar is fine and fibrous with a silky luster.

Origin of the White Sands

Sands are occasionally but rarely composed of gypsum. Deposits occur west of Duran, New Mexico, near a series of depressions or shallow lakes filled with gypsiferous materials. To the east of these lakes mounds of sand dunes occur of the same character as the White Sands. There is no known deposit of the same magnitude as the White Sands of Alamogordo, however.

Much has been written about the origin of the gypsum deposits at this locality. It is generally conceived that the original source of the gypsum is the Chupadera formations, but the question is to whether the gypsum came from the rocks as they were eroded from the ranges surrounding the basin, or if they were carried upward by waters under hydrostatic pressure from below and precipitated at the surface. From the vast quantities of gypsum that must have been washed into this basin and from various observation as processes which are at present in progress and which will be described later I am inclined to lean toward the former view, and see no reason to complicate the picture by elevating large quantities of gypsum, when a normal simple explanation is forthcoming.

It would seem well to mention some of the various opinions expressed:

Meinzer (1): The gypsum is derived from the gypsum beds in the Pennsylvanian rocks outcropping in the mountains. Since it is comparatively soluble it was brought to the low interior of the basin chiefly in solution in the surface and underground waters, and was re-deposited when these waters evaporated, either from desiccating lakes or from springs or wet areas fed from underground sources. The deposits thus formed have been altered and further transported by repeated resolution and redeposition and by wind work.

Betkin (5): According to this explanation, which differs from that heretofore given by geologists, an enormous deposit of large crystals was formed in sediments over a long period of time, the sands being a comparatively recent and rapidly formed product resulting from wind erosion and weathering of the materials of the dry lake bed. East of the lake outliers of coarse wind-blown crystals capped by vegetation show by their bedding that high dunes of this material recently existed in the region.

Talmage (6): Origin has been ascribed largely to the action of ground water bringing up gypsum in solution from beneath the valley. Field investigation shows: 1. The importance of ground water in transporting gypsum to the area where the active dunes exist has been overestimated. 2. That importance of ground water in the formation of the large selenite crystals and the importance of these crystals as the ultimate source of part of the White Sands has been underestimated. 3. Reworked by wind and weather, rather than ground water, has been directly responsible for material in the active dunes.

Russall (7): Underlying the Tularosa Basin are beds of Permian limestone and sandstone, between the layers of which are interspersed thick beds of gypsum. Boring made in recent --

years reveals that the gypsum is hundreds of feet below the present valley floor and that water is encountered at depths of a thousand feet or less.

The nature of the sedimentary rocks above the water bearing sands is favorable to upward seepage. As the water on its upward course passes through the gypsum deposits, it dissolves that material and carries a rather full load to the surface. The limestone through which the solution passes is not readily soluble; very little in addition to the gypsum is carried by the rising water. When evaporation takes place at the surface a fairly pure crust of gypsum is deposited, which, under action of the atmosphere, crumbles to form crystalline grains.

Hills and mountains surrounding the Tularosa Basin contain gypsum, and it is evident that some of the deposit is brought from this source by surface waters that feed it to the large natural evaporation pan at the south end of the sands. Whether the source is the deeply buried beds or the visible deposits in the mountains, the processes of evaporation, crumbling and drifting with the wind are the same.

Darton (8) and Winchester (9): The gypsum has been brought to the surface by a seepage of water, probably from the underlying Chupadera beds, and deposited on the surface in crusts, which have crumbled to sand and in the course of many centuries have been piled by the wind into great dunes covering many square miles.

Richard (12): The basin thus enclosed (Tularosa Basin) has no visible outlet and as evaporation exceeded precipitation we find the waters becoming loaded with the salts above innumerated. Into this great lake was poured the waste of mountains, rocks, gravel, mud, sand, etc. Centuries later the great abyss had been filled with these sediments made up principally of the detritus of the Permian formation or Red Beds, and highly impregnated with the salts of gypsum. At the time this great lake had practically been filled there were no White Sands.... The White Sands originated from the waters of this vast lake which lies to the west... As the wind sweeps rapidly over the surface of the saturated brine waters of the lake tiny wavelets are developed at the crests of which instantaneous crystallization of the crystal gypsum takes place; that is to say, a crystal of gypsum is born and this tiny crystal is at once swept eastward by the force of the wind and ledges on the shore. Thus there is in time built upon the shore a long line of crystals which in time develop into a larger quantity and finally become a white sand

dune... In order to prove the final theory of origin a small boat was pulled out into the lake from the East shore on a fairly windy day. A canvas tarp was so arranged to catch the particles of gypsum as they were crystallized from the crests of the waves and born forth by the wind. Examination showed these to be true crystals of gypsum and of course put the origin beyond all dispute and contention. (The latter point proves nothing to the writer as gypsum dust is prevalent everywhere when there is a strong wind blowing in the basin. I would not be surprised to see granules in the mechanism of a Brunton compass even though it be enclosed in a leather case upon passing through one of these storms.)

Brady (13): Describes the White Sands and region in general; associates the White Sands and dry climate with volcanic eruption. Lava is said to have diverted the assumed ancient river to another valley. Mentions Spanish legend that valley was "inhabited by prosperous people before the eruption destroyed river and brought about present desolation."

My idea as to the origin of the White Sands may be summarized as follows:

1. The Chupadera formation contains the only known source for the large quantities of gypsum now present in the Tularosa Basin.

2. Gypsum was precipitated from the evaporation of waters and deposited in thick beds in the Chupadera formation of Permian age. This process was made possible due to the prevailing arid conditions where bodies of water were cut off from the sea, probably by deltas, or in embayments extending landward, or in shallow lakes or playas, with the water supply being replenished periodically by successive advances and retreats of the sea.

3. Mountain making movements, at or near the close of the Cretaceous, with faulting and folding on a large scale, resulted in the formation of the Tularosa Basin somewhat as we see it today.

4. The Chupadera formation and overlying rocks were elevated around the margins of this Basin, thus being more susceptible to rapid erosional processes. In the Basin proper the Chupadera and overlying rocks were in a down-faulted block with several thousand feet of displacement. The Basin was probably not inclosed at this time which permitted great quantities of weathered materials to be carried away to the sea. Later movements closed the Basin and permitted no visible drainage outlet for the rock debris or saline substances carried in solution by the waters. A large lake was formed as is evidenced by the terraces which may be observed at the present time. Evaporation processes concentrated the waters and saline residues came into prominence under these ideal

conditions. The Chupadera formation was being rapidly covered by valley fill material until now it is over 1,000 feet below the valley floor in places.

5. As the shrinkage of this large lake took place great areas of the outcropping Chupadera was eroded on the margins (see sections Plate IV). The thick beds of gypsum were broken up and the material carried in solution to lower levels and deposited. At several periods at least crystals of selenite were forming on a large scale in this lake bed. Photos show the stratified gypsum laid down in this lake bed as well as the terraces containing the selenite crystals.

6. As the lake dried up and became an alkali flat, winds had an opportunity to start their work of transportation. The gypsum terraces and the selenite areas were subjected to weathering and as the material was broken up and reached the stage to be moved by the winds, the granules were carried to the east side of the lake and deposited, due to the prevailing southwest wind. The White Sands occur along the east side of the old lake bed and must have come mainly from the area once occupied by the lake. If the source is from the underlying Chupadera beds, which may barely be possible for a small percentage of the sands, then why do the sands not cover more of the basin as the Chupadera formation underlies most sections as evidenced by drill holes?

7. Various stages of this process of the formation of the sands may be observed at present. Since it can be seen I see no reason to resort to an underground source which process cannot be seen. There is a gradual gradation of materials between the old lake bed and the White Sands proper now present on the surface. Salenite crystals, gypsum terraces, coarse yellow crystals forming dunes with finer gradation eastward, intermingled with gypsite hills and some of the older dunes showing cross-bedding and now more or less cemented, and finally, the White Sands proper, free from fine silt which has been carried onward by the winds. The gradational zones mentioned are not sharply defined but overlap and intermingle and it is doubtful if they could be mapped to satisfaction without considerable time being spent in the area and even then test hole drilling would probably be necessary with considerable generalization as a final result.

8. Crystals now being precipitated in the flats forming crusts is a normal sequence since the whole area is saturated with gypsum, but it seems hardly probable that this could be a source for the large volume of gypsum sand and at the same time there must be a starting point since this feature was evidently not in progress until the dunes were well under construction and the area to the east of the old lake bed did become saturated with gypsum.

Movement of the Sand Dunes

I know of no proper records as to the rate of migration of the sand

dunes to the eastward. Now that the Park Service have made a National Monument in the area exact measurements should be made. MacDougal (4) mentions an advance of about one mile in 20 years. From local reports this estimate is much too large. At the southeast corner 10 to 20 feet per year is said to be more nearly correct. There is the possibility of correlating the rate of migration with the age of the yuccas. Richards (12) estimates that the sands will move into Alamogordo in 4097 A.D., and would reach Tularosa about 6151 A.D. I do not believe that he considered the amount of gypsiferous material remaining in the old lake bed to be transported or that the fact that the elder dunes become more or less cemented with transportation processes not so easily involved. At any rate the residents of the above mentioned towns have little to fear for some time nor need the Park Service take out protection in lands to the east in order to have White Sands for a monument in later years.

Road Building

I believe that present visitors are missing one of the most interesting features of the monument in that no road is available to proceed into the area of the old lake bed. In certain seasons travel may be made over most any section of the alkali flat. The road could easily be constructed along the west margin of the sands which would permit travel at all times. This would afford an opportunity for the public to obtain a better picture of the source of the gypsum now present in the White Sands. Mirages, a closer view of the San Andreas Mountains, etc., would lend much to the merits of such a development. These factors notwithstanding the idea that it would be pulling away from the "picnic practice" now prevalent in the scheme of things. The geological story could be related in a much more satisfactory manner after or during a visit to this area.

Tom Charles, resident custodian, is a live wire booster for the White Sands and is doing much good work for the Park Service. All possible assistance was supplied by him during my visit. Ben Daugherty and Barry Mohun, Jr., of the park staff, accompanied me on several trips and their presence was badly needed at times especially in the digging out process. Mr. Mohun, as well as Dr. Talmage, of the New Mexico School of Mines, supplied negatives for a number of the photos attached for which acknowledgement will be made later. White Sands is an area that the Park Service can justly be proud and my visit was indeed most delightful.

PARTIAL BIBLIOGRAPHY FOR THE WHITE SANDS NATIONAL MONUMENT

1. Meinzar, O. E., and Hare, R. F., Geology and Water Resources of Tularosa Basin, New Mexico; U. S. Geol. Survey Water Supply Papger 343, 1915.

2. Dersey, C. W., U. S. Department of Agriculture, Bureau of Soils, Bulletin 35, 1906.

3. MacDougal, D. T., National Geographic Magazine, Vol. 21, No. 8, August, 1910.

4. MacDougal, D. T., Carnegie Institution of Washington, Publication No. 99, 1908.

5. Botkin, C. W., The White Sands National Monument, American Association for Advance of Science, Southwestern Division, New Mexico State College, May 2, 1933.

6. Talmage, S. B., and Wootton, T. P., The White Sands, Excerpt from New Mexico School of Mines, State Bureau of Mines and Mineral Resources, Bulletin No. 13, Non-Metallic Resources of New Mexico.

7. Russell, Carl. P., The White Sands of Alamogordo, The National Geographic Magazine, Vol. LXVIII, Number II, August, 1935.

8. Darton, N. N., Red Beds and Associated Formations in New Mexico, U. S. Geological Survey Bulletin 794, 1928.

9. Winchester, Doan, E., The Oil and Gas Resources of New Mexico, Bulletin No. 9 of the New Mexico School of Mines, State Bureau of Mines and Mineral Resources.

10. Emerson, Elizabeth H., Sunset over the Sands, periodical New Mexico, July, 1935.

11. Emerson, Fred W., An Ecological Reconnaissance of the White Sands, New Mexico. Ecology, Vol. XVI, No. 2, April, 1935.

12. Richard, L. M., White Sands, Nomadic in Nature, May Enter Alamogordo in about 4097 A.D. Article dated August 4, 1932, and published in the Alamogordo News.

13. Brady, F. W., The White Sands: Mines and Minerals, Vol. 25, pp 529-530, 1905.

14. Mineral Resources 1931-Part II, page 192, U. S. Dep't. of Commerce, Bureau of Mines.

15. Twenhofel, William H., Treatise on Sedimentation, 1926.

16. Herrick, C. L., Geology of the White Sands of New Mexico, Jour. Geol., Vol. 8, 1900, pages 112-118.

AN INTERESTING ROOM AT WUPATKI

By James Brewer

By changing the old figure 8 trail that once encircled the two ends of Wupatki Pueblo a trailside feature has been added. The lowering of the east slope trail and raising of the west slope trail has also corrected the past common error of unguided visitors going over one part of the trail twice and not seeing the other side of the pueblo.

As now constructed, the east slope trail includes Room 43, excavated by C.W.A.

To me, this is a very interesting room and indicative of a thinking builder.

As shown by the accompanying plan, this was an "inside" room. Most of the rooms of Wupatki had two or more openings, usually so placed that fresh air would enter near floor level and smoke leave through a higher exit; in an inside room some other provision for ventilation would have been necessary.

In Room 43 ventilation was ingeniously provided.

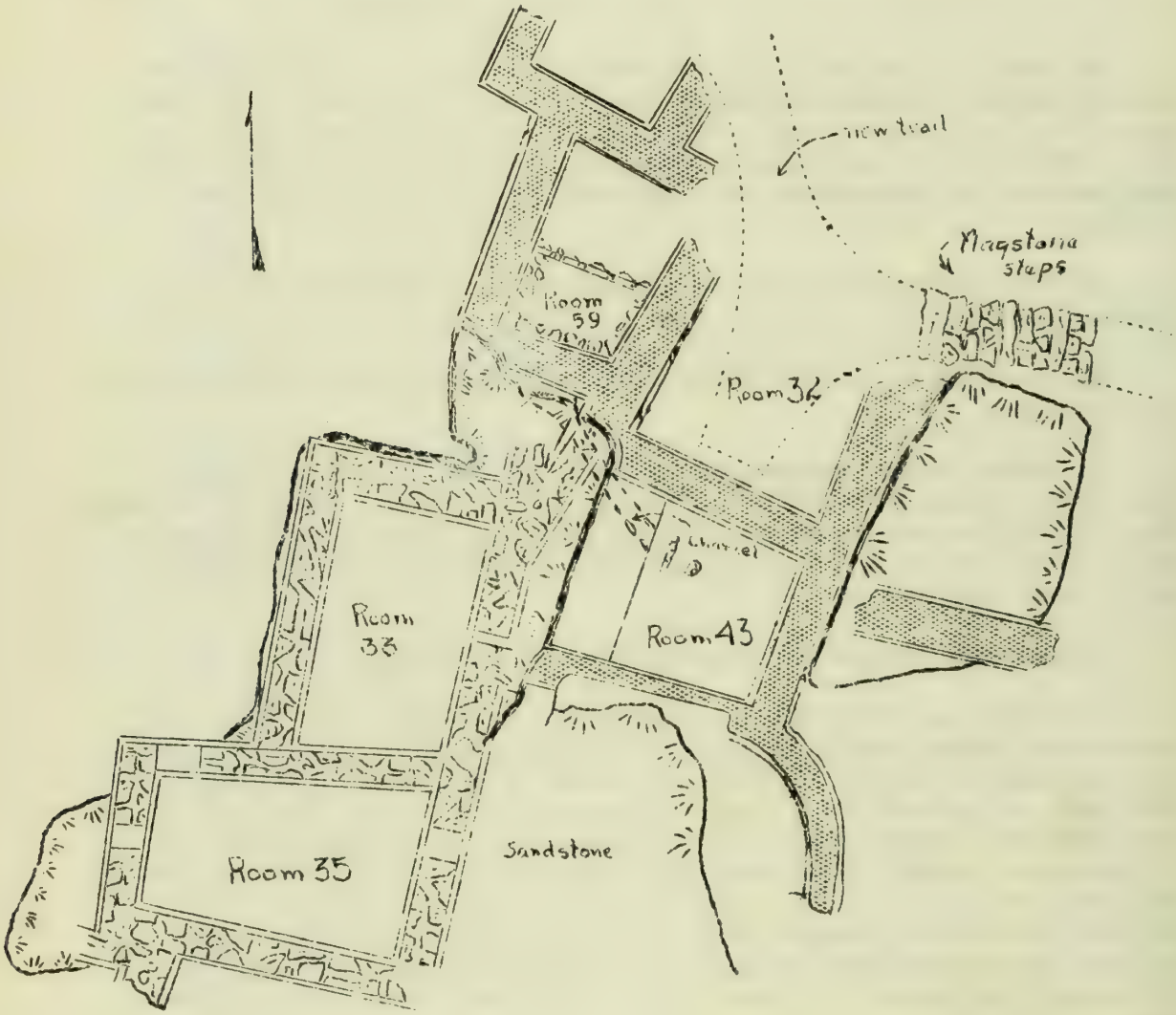
The room has the original firepit and deflector. The west end contains a raised platform; such platforms, not fully understood, are not uncommon in Wupatki Pueblo. As shown in the diagram, the entire west wall of Room 43 is a block of Moencopi Sandstone. The double line extending northwest of the deflector indicates the position of a slab-lined channel (once covered); the dotted line continuing through the groundstone indicates a natural crack in the lower part of the stone. This crack together with the covered channel was once used as a fresh air intake duct, as noted by R. Van Valkenburg in 1935; the outlet of the channel is through the eight-inch riser of the platform.

When Room 59 was constructed the north wall was built far enough from the sandstone block to preserve the down draft air intake of this channel.

Room 43 is one of the few rooms in which white plaster was sued. Possibly this was another compensation for an inside room, the white plaster naturally reflecting what light entered. The room adjoining on the east is a corner room and there red (moencopi) plaster was used.

The accompanying diagram was traced from the room plan map drawn by the Museum of Northern Arizona.

AN INTERESTING ROOM AT WUPATKI



The slab-lined channel in Room 43 connects with a natural crack in the sandstone to provide ventilation.

Note the space between the sandstone and the south wall of Room 59, left open for intake.

VISITOR RESEARCH

AT BANDELIER

March 19 to April 18, inclusive

Times asked	Questions numbered. Questions are given in descending order of frequency.
21	1. What is the altitude here?
9	2. Did the Indians live in all of those holes?
9	3. Do you charge for a guide?
9	4. How many visitors a year do you have?
9	5. How far up and down canyon de ruins extend?
7	6. Weren't they little people?
7	7. Were these built by the Indians? (Modern steps.)
7	8. Are these walls original? (In Community House.)
7	9. How far do we have to walk?
6	10. Do we have to register?
6	11. Wasn't that the kiva entrance? (Ventilator shaft.)
6	12. How many CCC boys are there in camp?
6	13. Did the Indians live in those little rooms?
6	14. How long is it since the Indians lived here?
5	15. How did smoke get out of the rooms?
5	16. Was this an old Indian trail?
5	17. What is that hole? (Shelf in kiva.)
5	18. How did the Indians stand erect in those low rooms?
5	19. Where does that trail lead to? (Back of Lodge.)
5	20. When was the road built into the canyon?
5	21. How many people lived in a room?
5	22. How long has this been a National Monument?
5	23. Did the Indians all go to cliffs in wartime?
5	24. Is there good fishing here now?
5	25. Do the Indians still live here?
4	26. How do you tell how high the walls were?
4	27. Do they find lots of arrowheads here?
4	28. Are all the ceilings blackened with smoke?
4	29. How long is the canyon?
4	30. Is this the original ladder? (A restoration.)
4	31. What makes all those holes in the cliff?
4	32. How did the Indians make a living?
4	33. Are there many rock carvings?
4	34. What was the population here?
4	35. What is the shortest road to Santa Fe?
4	36. What has the CCC camp done?
3	37. Were Indians living here when the Spaniards came?
3	38. How did they get in their houses?
3	39. What did they dig their caves with?
3	40. Why dod those poles stick out of the walls? (vigas.)
3	41. Do they all look like this? (Cave and Talus ruins.)
3	42. Do we have to walk through the ruins?

Times asked.	Questions numbered. Questions are given in descending order of frequency.
3	43. Did each clan have a kiva?
3	44. What obliteration work does Park Service propose here? (Removal of modern structures, etc.)
3	45. Who was the first white man in the canyon?
3	46. How long have you been here?
3	47. Do you stay here all year long?
3	48. Has any excavating been done here?
3	49. What makes the coloring on the rocks?
3	50. Why won't the Park Service let you dig?
3	51. How do you get to San Ildefonso?
3	52. What is that cable across the canyon for?
3	53. What is the difference between National Parks and National Monuments?
3	54. What restoration work is planned here?
3	55. What tribe of Indians lived here?
3	56. Do you have a museum?
3	57. Where did the Indians bury their dead?
2	58. Do we climb to the top of the cliff?
2	59. What kinds of grass do you have?
2	60. What kind of bird is that? (Raven.)
2	61. Weren't the Indians prehistoric?
2	62. Can I walk it in high heels?
2	63. Is Puye a National Monument?
2	64. Are all those weathered holes?
2	65. How do you get into this Service?
2	66. How did the Indians get out of the canyon before the road came in?
2	67. How do we get to Taos?
2	68. Are those talus houses restored?
2	69. How far back in the cliff do the rooms go?
2	70. Did the Indians have sheep?
2	71. Which has the most ruins - Frijoles or Puye?
2	72. Where did this volcanic material come from?
2	73. How do you know they did farming here?
2	74. Are you here all summer?
2	75. Does this rock weather away rapidly?
2	76. What are those poles for? (loom supports.)
2	77. Where does this creek come from?
2	78. What is the San Ildefonso Buffalo Dance like?
2	79. Do you have bad floods here?
1	80. How did a man qualify to enter kiva ceremonials?
1	81. Was that clay on the walls, or did the Indians put it on?
1	82. What is that bush? (Rabbit Brush.)
1	83. Is that the ocatillo? (Cane Cactus.)
1	84. Isn't that a porphyry? (A spotted river boulder.)
1	85. Will mineral dye last longer than vegetable dye?

Times asked	Questions numbered. Questions are given in descending order of frequency.
1	86. Don't they make gin out of Juniper berries?
1	87. What is this formation made of?
1	88. Will you pose for this picture, so I can have some native color?
1	89. Why don't you keep up the old trail?
1	90. Did they live in those small rooms too? (cists.)
1	91. Did CCC boys build that? (Community House.)
1	92. Do you see many robins here?
1	93. Did they keep the babies in those holes? (cists.)
1	94. Is Taos culturally independent from other pueblos?
1	95. Were these holes used for rafter supports?
1	96. What is the largest party you ever had through the ruins?
1	97. Do all kivas have tunnels?
1	98. When kivas are close together aren't they connected by tunnels?
1	99. Can you read Indian sign language?
1	100. What kind of timber are those rafters?
1	101. Why are there three kivas in Tyuonyi?
1	102. How old did a boy have to be to enter a kiva?
1	103. Did the Indians have a fort clear across the canyon?
1	104. Do men still do all the weaving?
1	105. Why is Tyuonyi thicker on one side than the other?
1	106. How did they build their fires?
1	107. Do all real cedars come from Lebanon?
1	108. Do you have lots of birds here?
1	109. What kinds of animals do you have?
1	110. Where did the Indians build their houses?
1	111. What kind of bird is that? (Jay.)
1	112. Where did they get their plaster clay?
1	113. Is this sage brush? (Salt bush.)
1	114. This is piñon pine, isn't it? (YP)
1	115. Was all weaving done in kivas?
1	116. Was the hatchway for entrance or a smoke vent?
1	117. What connection have these ruins with Taos?
1	118. Where is the old trail?
1	119. Were all men allowed to enter kivas?
1	120. Did the high-ups have better houses than the others?
1	121. Did the Mesa Verde people come here?
1	122. Were these people related to the Mayans?
1	123. Did they raise cotton here?
1	124. How many officers has the CCC camp?
1	125. Why have they got you doing this type work?
1	126. Do they let you go anywhere?
1	127. Are both CCC officers lieutenants?
1	128. Is the top of the cliff flat, or are there hills?
1	129. Is this stuff really sandstone? (rhyolite tuff.)

Times asked	Questions numbered. Questions are given in descending order of frequency.
1	130. Is this ash water deposited?
1	131. What kind of rock is that? (andesite.)
1	132. How are the weathered holes formed?
1	133. How old are the formations?
1	134. What causes hardening of cliff surfaces?
1	135. Is this finger nail coil pottery?
1	136. What is that? (new reservoir.)
1	137. Have you ever seen the ruins near Mexico City?
1	138. Are those the Officers' Quarters? (Comfort station.)
1	139. What was the Indian flute made of?
1	140. When was Tyuonyi built?
1	141. Which ruins are oldest? (cliff or community house.)
1	142. Don't you get tired answering silly questions?
1	143. Did they hang meat on that? (loom support.)
1	144. This is limestone, isn't it? (rhyolite tuff.)
1	145. What did they cover their doors with?
1	146. Did this ever have a roof? (Tyuonyi's passage.)
1	147. What kind of bird is that (Vulture)
1	148. Why did the men weave?
1	149. Did they have saber toothed tigers then?
1	150. Where is the Pajarito Plateau?
1	151. Why do they call this the Pajarito Plateau?
1	152. Did the CCC boys build the road into the canyon?
1	153. Were these people related to the Aztecs?
1	154. Were Aztec Ruins built by Aztecs?
1	155. Did kiva openings come up into rooms?
1	156. Did the Taos Indians come from here?
1	157. How far do the ruins extend?
1	158. What is the name of this creek?
1	159. Is the upper part of the cliff lava?
1	160. When did the Indians live here?
1	161. Did they have any livestock?
1	162. Was Bandelier here with Dr. Hewett?
1	163. Have you read the Delight Makers?
1	164. What kinds of trees do you have?
1	165. What makes you believe only men could enter kivas?
1	166. What do you intend to do after you leave CCC's?
1	167. What is a clan?
1	168. Can you still get up the old trail?
1	169. Have they found any well-preserved pieces of pottery here?
1	170. Are all of those caves higher up the cliff well explored?
1	171. Was the Community House excavated when Bandelier was here.
1	172. Is Puye the same as these ruins?
1	173. Is the Custodian here any relation to the Jacksons of Montezuma?
1	174. Will there ever be a museum here?

Times asked	Questions numbered. Questions are given in descending order of frequency.
1	175. Are we allowed to tip guides?
1	176. Did they weave in kivas?
1	177. Have they ever found any mummies here?
1	178. Were these Indians related to those of the Davis Mountains in Arizona?
1	179. Did the CCC's build these steps?
1	180. Did these people have toilets then?
1	181. Was this place used for a bathhouse, where the Indians took sweat baths? (pointing to kiva.)
1	182. What kind of formation is this? (pointing to cliff.)

****

AT TONTO

By Woodrow Spires

In regard to Bob Rose's request for a list of questions by visitors which might prove beneficial in future museum developments, I am sorry to say I have not been able to keep any accurate list or account of times which the questions were asked. I have prepared a list of the most common occurring questions arranged in a graduated form of their occurrence.

1. Why did they build up here instead of in the valley near their fields?
2. Who were the people occupying these dwellings?
3. Did these people anti-date the Indians?
4. Where did they get their water?
5. Were they hunters?
6. Were they farmers if so where did they farm?
7. What is the difference between a park and a monument?
8. How do you know how old these ruins are?
9. How do these ruins compare with Casa Grande, Montezuma, Mesa Verde?
10. Did you say the 14th Century was prehistoric?
11. How did the Cliff Dwellers differ from the other people of the same time?
12. What material did they use for wall construction?
13. How great a population did this valley support?
14. Where did these people go?
15. Is there any connection between the Pueblo's and the Mexican culture?
16. Are there any other ruins in this vicinity?
17. Did these people use metal in any form?
18. Where did they obtain their knowledge of farming and food plants?
19. Were these people very short in stature?
20. Who first discovered this ruin?

21. Why were they better weavers than potters?
22. Has the physical features and climatic conditions of the country changed in the last 600 years?
23. Why don't you find any cremation burials?
24. Why are these timbers in such good state of preservation?
25. Why did they use trash heaps for burial grounds?
26. How can you identify an Indian skull?
27. Did they have any domesticated animals?
28. What materials did they use for paints?
29. Did they have large families?
30. Why aren't arrow points more numerous?
31. Why did they excavate this section?

The above questions are the most common ones in regard to the educational features of the Monument, but the following are the ones occurring most often.

1. Where is the Monument?
2. Do you stay here all the time?
3. Don't you get any relief?
4. How much do you get paid?
5. Haven't you a wife?
6. Doesn't the Government furnish your subsistence?
7. Isn't it lonesome?
8. What do you study for this job, forestry? (After an hour or so in the ruins and museum).
9. Do you do your own cooking?

This is only a few of the many questions I am bombarded with every day regarding a rangers private life.

Needless to say I get a world of stupid questions which are in no way beneficial to a survey of this type so I will not bother to cite any of them.

****

PARKER'S WILD PALMS

(Reprint from Arizona Republic, January 12, 1936. Sidelight interesting to puzzled Jimmy Brewer who recently discovered two unusual date seeds apparently in situ in a prehistoric Wupatki midden.)

As an ardent student of Arizona flora and occasional co-worker in behalf of the herbarium of the United States station at Sacaton, I was very much surprised in reading the enclosed clipping from your great Resource Edition entitled "Wild Palms Grow in Parker Area." Surprised and chagrined, first because that, if a fact, they had never before been reported, second, because the item did not state whether these palms were of the fan type like the well-known fan palm from Palm valley, California, or the Plumosus type like the date or cocoa palm.

We have been all these long years laboring under the belief that the California fan palm, species Washingtonia, was the only true palm indigenous to the North American continent, the coconut palms in Florida are not because they were accidently grown from nuts that floated ashore from a ship loaded with nuts from Cuba to New York market broken up in a storm. There are two known species of the genus of this California fan palm. Washingtonia filifera and Washingtonia robusta, both well known in his valley. Now the question arises: Are these palm of Parker the same or are they another unknown? It surely would be worth the while for a person or persons qualified and competent to do so to make an investigation of this point. I say competent and qualified advisedly because it was only after long years that it was established that the California fan palm was a family all its own and renamed Washingtonia after it had been classed with the genus Brahea, named after the celebrated Danish astrononer Braha. Later it was classed again as Pritchardia filifera, both were found to be wrong and therefore, being the only true American palm, the name Washingtonia was proposed and given.

Such errors in botany have been more frequent in the past than they are now. We have an example right here in our area. The saguaro, giant cactus. For a great number of years, this landmark of our desert was known as cereus gigantea until it was found that it was not, but a genus of its own and the only species of this at that. So a new name had to be found and it was suggested by Drs. Bitten and Rose, if I remember correctly, to name this outstanding desert plant in honor of Andrew Carnegie, who endowed the world-famous Desert Laboratory near Tucson and so it is now officially, Carnegia gigantea.

Another confusing fact is that the article mentions that the Palm is like the Royal Palm, leaning down at an angle. Now as a matter of fact, the Royal Palm, a native of Hawaii, grows as straight as our Fan Palms, always assuming that the correspondent is speaking of the Oreodoxa regia.

In closing, your correspondent mentions that there are no other palms within hundreds of miles. I do not know how far Palm Valley in California, on the edge of the Colorado desert, is from this point on the Colorado River, but it is certainly not too far as the robins fly, who on their migration south rest, water and feed on the berries of the fan palms in Palm valley, like they do on their return trip, rest and feed on the seed of the palm in Salt River valley and when the seeds have gone through the gizzards and the intestines of these birds, they will sprout and grow as readily as corn. So it is just as likely as not that a bird flying from Palm valley to the Colorado river for another drink and rest at the C Bar S Ranch left the seed behind.

SOUTHWESTERN BIRD BANDING TOTALS

Species	Bandelier		CasaGrande		Chaco		Navajo		Pipe Spr.		Tumacacori		Walnut		Wupatki		Total
	Prior	May	Prior	May	Prior	May	Prior	May	Prior	May	Prior	May	Prior	May	Prior	May	
Bluebird,Ch-b.													215				215
Cardinal,Ariz.			1								9						10
*Chat,Long-tail										2							2
Crossbill,Bend.													17				17
Chickadee,Mtn.							6						3				9
Creeper,R.Mtn.	2																2
Dove, Inca			2	2													4
Dove, W. Mourn.			13	3							1						17
Finch, House			132	5								2					139
Flicker,Red-sh.	1																1
Flcthr, Ariz.			2														2
Flyctr,Vermln												2					2
Gldfnch,Gr-bkd													2				2
Jay,Long-crstd	2																2
Jay, Woodhouse	3						6										9
Junco,Gra-hded	56						12	25									93
Junco,Montana							9										9
Junco,Pnk-side	7																7
Junco, Red-bkd	9						2						42				53
Junco,Shufeldt	7						14	2					11				32
Mockingbird,W.			2									5					7
Nuthatch, Pyg.	21												26				47
Nuthatch, R.M.	2												6				8
Owl, W. Horned			1									2					3
Phoebe, Say			19								4						23
Quail, Gambel			58								1						59
Roadrunner			4														4
Robin, Western													7				7

SOUTHWESTERN BIRD BANDING NOTES 410 PRINTED FOR MAY, 1936

Species	Bandelier		CasaGrande		Chaco		Navajo		Pipe Spr.		Tumacacori		Walnut		Wupatki		Total
Spscker,R-nape													4				4
Spscker,R. Mtn.													2				2
Shrike,White-r			3														3
Siskin, Pine													1				1
Solitaire,Town.													7		15		22
Sparrow,Gambel			415						43	55	1						514
Sparrow,Lincoln			1														1
Sparrow,W.Lark											4						4
Sparrow,Nev.Sav									1								1
Sparrow,WVespr			1														1
Sparrow,Wh-crn			1	6			6										13
Swallow,Ro-wng			5	1													6
Thrasher,Bend.			5								3						8
Thrasher,Criss			7	2													9
Thrasher,Sage															2		2
*Thrush,Rus-bkd						2											2
Titmouse,Gray													1				1
Towhee,Canyon											5						5
Towhee,Gr-tail			2							2	5				1		10
Towhee,Spurred	1						1										2
*Verdin												1					1
Waxwing,Cedar															1		1
Woodpkr,Cactus				1							1						2
Woodpkr,Gila			8														8
Woodpkr,Mearns													9				9
Wdpkr,RM Hairy	1																1
Wren, Cactus			36	4							1	2					43
*Wren,Baird Be.												3					3
* New Species to this listing																	
SUB-TOTAL	112	0	718	24	0	2	56	27	44	59	35	17	353	0	19	0	
TOTAL		112		742		2		83		103		52		353		19	1466

RUMINATIONS

We have heard quite a bit about uniforms lately. We had an Office Order issued covering new uniform regulations, and we hardly got it bound into the file before Order No. 324 came along making a couple of more or less important changes in it. You can always get a rise out of any Park Service man or group of Park Service men by swinging the talk around to uniforms. They are all interested.

Office Order No. 324, dealing with uniform regulations, starts out by saying: "The fundamental purposes of the uniform are to symbolize the National Park Service and to identify the wearer to park visitors." There is a question in my mind as to whether this is a complete statement of the case.

There are still several men in the Service who were with us when we went through the conference which decided that a uniform should be worn by Park Service employees and what kind of a uniform it should be. Correct me if I am wrong in seeming to remember that there was considerable talk at that conference about the morale building value of a uniform. I also seem to remember being invited to "Look at the Mounted Police of Canada" a good many times at that conference; in fact, we thought so much of them that we adopted the hard hat brim which they wore, and which we kid ourselves into believing is a "Western hat."

In a February meeting in Washington there was a definite effort made to put ECW men in ECW uniforms and National Park Service men in National Park Service uniforms. The regulation in regard to this at that time read: "ECW officials, inspectors, technicians, and supervisory personnel shall wear the authorized ECW uniform." The first Office Order carried those words, but soon afterward, when Office Order 324 came out, the underscored words were missing. It now says: "ECW supervisory personnel shall wear the authorized unform." What about "Officials, inspectors, and technicians?"

Two paragraphs above, the original regulations said: "Emergency Conservation Work and other Emergency employees, when assigned to regular public contact service, in any of the areas open to visitors, shall wear the uniform when specifically authorized by the Director." In the revised Office Order 324 the words underscored are omitted.

Under the regulations as first issued ECW officials, inspectors and technicians would have had to wear ECW uniforms except in the few cases where they were working in any of the areas open to visitors and, for some reason, the Director should want specifically to authorize them to wear the Park Service uniform.

Under the regulations as revised in Office Order No. 324 the way is open to put all ECW officials, inspectors, and technicians into the Park Service uniform.

Somebody evidently thinks the National Park Service uniform is a pretty nice uniform to wear.

Personally, I agree with those who think that.

Do you remember what pleasure Mr. Mather used to get out of wearing the uniform in the field? Do you remember how he talked about its morale building quality? That it would help to weld the men into a compact unit of picked men who were proud of their work? That it would build up an esprit de corps which would hold us together through trying times?

These ideas are as sound now as when he stated them. The badge can symbolize the Service and identify the wearer to the park visitor, but the uniform can do more than that: it can build morale and prestige, morale in the man who wears it and prestige in the eyes of the public - when it is worn by the right man.

Have we changed? Do we believe now that we were mistaken when we thought the uniform might be a morale builder? Is that why we have decided to keep everybody out of the uniform except those who actually deal with the public? Is the Esprit de Corps so fine amongst all of us except those who deal with the public that the wearing of the uniform would not prove a morale builder? Do we hesitate to be known as National Park Service men?

It seems strange that we veterans should feel this way about the uniform, if we do. Maybe we are mistaken in feeling that there is no prestige in the uniform and in trying to keep from wearing it as much as we can, in acting as though we are slightly ashamed of it. Other people seem rather anxious to get into it.

Cordially,

Tom Boss

Southwestern Monuments . . .

MONTHLY REPORT . . JUNE . '36 .



DEPT . OF . THE . INTERIOR .

. N . P . S .

SOUTHWESTERN MONUMENTS
JUNE, 1936, REPORT
INDEX

CONDENSED GENERAL REPORT

Travel----------415
General----------416
Administration----------416
Maintenance, Improvements, New Construction----------417
Activities of other Agencies in Monuments----------418
Flora, Fauna, Natural Phenomena----419
Use of Mon. Facilities by Public--415
Protection----------419
Miscellaneous (Mail Count)-------420

REPORTS FROM THE MEN IN THE FIELD

Aztec Ruins----------444
Bandelier----------460
Bandelier Forestry----------462
Canyon de Chelly----------651
Capulin Mountain----------453
Casa Grande----------433
Chaco Canyon----------431
Chiricahua----------429
Chiricahua ECW----------430
El Morro----------446
Gran Quivira----------437
Hovenweep----------455
Montezuma Castle----------440
Natural Bridges----------455
Navajo----------453
Pipe Spring----------438
Rainbow Bridge----------437
Sunset Crater----------427
Tonto----------445
Traveling Ranger----------455
Tumacacori----------434
Walnut Canyon----------440
White Sands----------427
Wupatki----------421
Closing----------467-3

HEADQUARTERS STUFF

Branch of Education----------462
Contacts Discussion----------467

THE SUPPLEMENT

1936 Bird Banding in Southwestern Monuments ----------468
- At Casa Grande National Monument----------472
- At Tumacacori National Monument----------477
- At Bandelier National Monument----------478
- At Navajo National Monument----------478
- At Pipe Spring National Monument----------479
- At Walnut Canyon National Monument---------- ----------479
Texas Missions, By Ruth E. Butler----------480
Notes on How to Build a Hogan, By James Brewer, Jr.----------485
First Show by Navajos a Success (Reprint "Coconino Sun" 6-12-36------488
Walnut Canyon Geological Report, By V. W. Vandiver, Reg. Geologist---492
Visitor Research at Pueblo Grande - Questions asked----------499
Ruminations, by the Boss ----------503

SOUTHWESTERN MONUMENTS
PERSONNEL

HEADQUARTERS, Southwestern Monuments, Coolidge, Arizona: Frank Pinkley, Superintendent; Hugh M. Miller, Acting Assistant Superintendent; John H. Diehl, Associate Engineer; Robert H. Rose, Assistant Park Naturalist; Dale S. King and Charlie R. Steen, Junior Park Naturalists Millar Singerman, Clerk-Stenographer; Luis Gastellum,ECW Clerk; Deric Nusbaum, Traveling Ranger; Clarence Cole, Student Technician.

GENERAL FIELD MEN: Charles A. Richey, Resident Landscape Architect; J. B. Hamilton, Associate Engineer; J. H. Tovrea, Chief Engineering Aide; Andrew Clark, Topographer, Carl Schmidt, Rodman.

FIELD STATIONS:

1. Arches---Moab, Utah. J. M. Turnbow, Custodian.
2. Aztec Ruins---Aztec, New Mexico. Johnwill Faris, Custodian; Robert W. Hart, Ranger-Archeologist.
3. Bandelier---Box 669, Santa Fe, New Mexico. Earl Jackson, Custodian J. W. Hendron and Alfred Peterson, Temporary Rangers.
4. Canyon de Chelly---Chin Lee, Arizona. Robert R. Budlong, Custodian Doug Harritt, Temporary Ranger.
5. Capulin Mountain---Capulin, New Mexico. Homer J. Farr, Custodian.
6. Casa Grande Ruins---Coolidge, Arizona. W. J. Winter, Custodian; J. Donald Erskine, Park Ranger.
7. Chaco Canyon---Crownpoint, New Mexico. Thomas C. Miller, Custodian Homer F. Hastings, Guide.
8. Chiricahua---Willcox, Arizona. Frank Fish, Custodian.
9. El Morro---Ramah, New Mexico. E. Z. Vogt, Custodian.
10. Gila Cliff Dwellings---Cliff, New Mexico. No Custodian.
11. Gran Quivira---Gran Quivira, New Mexico. George Boundey, Custodian
12. Hovenweep---Cortez, Colorado. No Custodian.
13. Montezuma Castle---Camp Verde, Arizona. Martin Jackson, Custodian; Curtis Cox, Guide.
14. Natural Bridges---Blanding, Utah. Zeke Johnson, Custodian.
15. Navajo---Kayenta, Arizona. John Wetherill, Custodian; Milton Wetherill, Ranger-Historian.
16. Pipe Spring---Moccasin, Arizona. Leonard Heaton, Acting Custodian.
17. Rainbow Bridge---Rainbow Lodge, Arizona. No Custodian.
18. Saguaro---Tucson, Arizona.
19. Sunset Crater---Flagstaff, Arizona. J. W. Brewer, In Charge.
20. Tonto---Roosevelt, Arizona. Woodrow Spires, Ranger.
21. Tumacacori---Box 2225, Tucson, Arizona. L. R. Caywood, Custodian.
22. Walnut Canyon---Flagstaff, Arizona, Paul Beaubien, Ranger.
23. White Sands---Alamogordo, New Mexico. Tom Charles, Custodian.
24. Wupatki---Flagstaff, Arizona. J. W. Brewer, Ranger.
25. Yucca House---Cortez, Colorado. No Custodian.

CONDENSED REPORT

Coolidge, Arizona
July 1, 1936

The Director,
National Park Service,
Washington, D. C.

Dear Mr. Director:

The Condensed Report for Southwestern Monuments for May, 1936:

TRAVEL

	June, 1936	June, 1935	June, 1934
Aztec Ruins	1,323	903	1,435
Bandelier	1,810	2,083	2,000
Canyon de Chelly	209	179	---
Capulin Mountain	2,500	2,500	1,200
Casa Grande	1,661	1,359	1,434
Chaco Canyon	643	649	264
Chiricahua	851	700	---
El Morro	223	373	296
Gran Quivira	309	386	---
Montezuma Castle	1,216	1,587	1,698
Navajo	33	---	25
Pipe Spring	362	461	660
Rainbow Bridge	66	28	---
Sunset Crater	459	563	---
Tonto	335	447	---
Tumacacori	911	843	764
Walnut Canyon	1,441	1,306	---
White Sands	8,852	---	---
Wupatki	267	178	72
Yucca House	---	30	---
Actual Reported Registration	23,471	14,575	9,848

The 17 monuments which reported both in 1935 and 1936 showed a slight increase from 14,575 to 14,619---74 visitors, or 0.5%.

The 11 monuments which reported both in 1934 and 1936 showed an increase from 9,849 to 10,949---1,101 visitors, or 11.1%.

Monuments where accurate counts are taken show rather constant increases. Basing estimates on them, we believe that June, 1936, as a travel month was about ten percent better than 1935, and approximately the same percent better than 1934.

Reports from various parts of the area indicate that dryness and heat are factors which deter visitors from leaving main highways.

000 GENERAL

010 MATTERS OF UNUSUAL IMPORTANCE

El Morro: Interest rapidly making headway concerning important Cuatrocentennial celebration to be held in New Mexico in 1940, 400 years after the coming of Coronado. A director of the celebration visited El Morro last month inspecting conditions and making plans. This monument should play one of the most important parts. See page 447.
Hovenweep: See page 455 and following for important notes as to stabilization of ruins at this monument.
Wupatki: First Navajo Arts and Crafts Exhibition was a great success and is believed to have contributed toward the revival and development of old Navajo handicraft among the interesting Indians of the Wupatki Basin. See pages 423, 488.

020 GENERAL WEATHER CONDITIONS

North central New Mexico seems to be entering its rainy season, but the rest of the Southwest is hard hit by drouth and heat. El Morro reported one rain, but the remaining monuments seem to have had little or no precipitation. Range conditions are very poor in northern Arizona near Pipe Spring, and the dry cinders are crippling sheep in the vicinity of Wupatki. The normal July rains will remedy the situation, it is believed.

100 ADMINISTRATION

123 VISITS OF NATIONAL PARK OFFICERS TO MONUMENTS

Bandelier: Custodian T. C. Miller, District Architect Richey, District Engineer J. B. Hamilton.
Canyon de Chelly: Botanist H. E. Bailey, District Engineer J. B. Hamilton, Temporary Ranger Jimmie Brewer.
Casa Grande: Custodian Evon Z. Vogt, Mr. Harry Hommon of U. S. Public Health Service.
El Morro: District Engineer J. B. Hamilton.
Navajo: Regional Geologist Vincent W. Vandiver.
Tumacacori: Ranger Donald Erskine, Engineer Clifford London.
Walnut Canyon: Acting Chief of Wildlife Division Victor Cahalane, Regional Wildlife Technician Adrey Borell, Jr. Naturalist Charlie Steen.
White Sands: ECW Assistant Regional Director George Collins, Regional Architect Charles A. Richey.
Wupatki: Park Naturalist Edwin McKee. Junior Park Naturalist Louis Schellbach, Wildlife Technician Russell Grater, Regional Geologist Vincent Vandever, Junior Park Naturalist Charlie Steen.

180 CIRCULARS, PUBLICITY

Headquarters: Issued: 5,000 White Sands informational leaflets
1,500 Aztec Ruins informational leaflets

180 CIRCULARS, PUBLICITY (CONT.)

2,000 Chiricahua informational leaflets
500 Natural Bridges informational folders
Wupatki: Local and Phoenix papers carried news stories on Navajo Arts and Crafts Exhibit which was held near the monument. See page 422.

200 MAINTENANCE, IMPROVEMENTS, NEW CONSTRUCTION

210 MAINTENANCE, UNUSUAL

Chaco Canyon: New dump truck proved very useful in clearing blow sand from cattleguards, a somewhat involved process. See page 431.
Tonto: Considerable time spent during June strengthening badly weakened walls of Lower Ruin. These stabilization measures are temporary at the best, and Tonto, like all other archeological monuments, urgently needs a comprehensive stabilization program. See page 446.

220 IMPROVEMENTS

El Morro: Acting Ranger Vogt experimenting somewhat successfully with copperas solutions to stain rock steps a more natural color. See page 450.
Navajo: Considerable work done on trails to make them passable in wet weather. See page 453.

230 NEW CONSTRUCTION

Canyon de Chelly: See page 452.
Pumphouse walls to four feet height.
Pump working smoothly; reservoir full.
Supplementary septic tank in place and reservoir almost covered by rock.
Chiricahua E.C.W. See page 430.
Echo Trail progressed 2,500 feet, making a total of 10,000 feet.
Work re-started on Massai Point--Balanced Rock Trail and 400 feet were completed. Trail now at 2,000-foot length.
All poles in place for Massai Point-Portal telephone line and six miles of wire are in place.
Grading of service road and utility area 85% completed. Surplus material being used to dress fill slopes and obliterate borrow pits on Bonita Canyon highway.
Utility area wall 35% complete.
Usual maintenance on Bonita Highway accomplished.
Pipe Spring. See page 439.
Crew of eight men worked all month.
Parking area and road filled and graded. One hundred and fifty yards of graveling completed.
Now hauling flagstone for walks and stone for guard rails.

300 ACTIVITIES OF OTHER AGENCIES IN MONUMENTS

320 COOPERATING GOVERNMENT AGENCIES

Chaco Canyon: Soil Conservation Service has accomplished much planting around headquarters and along flood diversion dikes on canyon floor. Constructed: 1,000 feet of earthen diversion dikes, three rock and wire sausage dams, three cable fences. All of construction work is in connection with revetment projects highly important to major ruins See page 433.

320 NON-GOVERNMENT AGENCIES

Chaco Canyon: University of New Mexico and School of American Research under R. G. Fisher and Gordon Vivian began work of excavating and repairing Casa Rinconada. See page 432. University of New Mexico's new headquarters building now complete enough so that kitchen, dining room, and cellar are usable. See page 432.
Navajo: Fourth Rainbow Bridge-Monument Valley Expedition assembling. See page 454.
Walnut Canyon: Curator of Biology of Museum of Northern Arizona is making a botanical collection. See page 440.

350 DONATIONS AND ACCESSIONS

Chaco Canyon: Museum of New Mexico very kindly loaned a fine collection of Chaco artifacts for display at the monument. See page 431. Aztec Ruins National Monument transferred a Tree Ring Chart. See page 433.
Headquarters. See page
2,000 Botany labels from Field Division of Education.
Rio Grande Culture Area map for Bandelier from Field Division of Education.
"Pottery of Pecos, Vol. II from Dr. A. V. Kidder.
Wupatki: Museum of Northern Arizona through kindness of Dr. and Mrs. H. S. Colton donated prizes for Navajo Arts and Crafts Exhibit which was held June 6 and 7 at Boundaries of monument.
Navajos built a sweat hogan and a ceremonial hogan which are permanent and will form an interesting addition to the monument's exhibits. These structures are located in a small basin entirely out of sight of the prehistoric ruins and thus will not cause confusion in minds of visitors.
Series of photos were obtained of use of sweat hogan and of belt and blanket weaving. These photos will be important in future museum exhibits. Temporarily they will be displayed in the sweat and ceremonial hogans.
See pages 422-426.

400 FLORA, FAUNA, NATURAL PHENOMENA

440 INSECT CONTROL

Rainbow Bridge: Serious infestation of tent caterpillars in aspen of region. See page 437.

460 BIRDS

El Morro: See page 448 for June check list.
Young eagle captured and released. See page 448.
General: See page 468 for bird banding totals in Southwestern Monuments for fiscal year 1936.
A total of 1,547 birds of 63 species were banded in the nine monument stations during 1936. This seems a creditable total for the first year of such activity.
Montezuma Castle: See page 442 for June check list.

600 PROTECTION

620 FIRE PROTECTION

Chiricahua: On June 12, 50 CCC men were used in suppressing fire off monument boundaries in Rucker Canyon. See page 430.
Chaco Canyon: Custodian reports that Wildlife Technician Borell performed a good piece of work in controlling rodents in immediate vicinity of dikes by use of carbon bisulphide gas. No injury to other animals or birds. See page 432.

650 SIGNS

Montezuma Castle: Seven signs erected to replace missing ones. State highway wishes to cooperate in future. See page 441.

660 SANITATION

Casa Grande: Harry Hommon made inspection preliminary to installing of much-needed new sewage disposal system. See page 433.

900 MISCELLANEOUS

900 MISCELLANEOUS (CONT.)

MAIL COUNT

Incoming:		
Government	2,102	
Personal	650	
Total incoming		2,752
Outgoing:		
Government only	1,773	1,773
Telegrams:		
Outingoing	38	
Incoming	33	
Total telegrams handled		71
Grand Total		4,596

Cordially,

Frank Pinkley

Frank Pinkley,
Superintendent.

REPORTS FROM MEN IN THE FIELD

WUPATKI

By James Brewer, Ranger

500 Use of Monument Facilities by the Public

126 guests registered at Wupatki Pueblo; 227 at the Citadel Group; 86 names are duplicated, leaving a total of 267 registered visitors to this Monument in June, 1936; 1935, 178; 1934, 72.

179 additional visitors registered at the Navajo Arts and Crafts Exhibit and are not included in the above regular travel figures.

States were represented as follows: Arizona, 62; California, 26; Colorado, 16; Texas, 10; New York, 9; Pennsylvania, 7; New Mexico, 7; South Carolina, 6; Virginia, 5; Ohio, 5; Kansas, Illinois, Florida and Rhode Island, 3; Missouri, Oregon, Washington, Nebraska, and Michigan, 2; Utah, Nevada, Oklahoma, North Carolina, Alabama, 1. Foreign countries: England, 2; France, Germany and Australia, 1.

530 Newsworthy Visitors

Dr. and Mrs. H. S. Colton and Miss K. Bartlett brought Mr. and Mrs. Bartlett on the 25th.

Tony and Mrs. Richardson on the 6th.

Miss Mary (Arizonology) Boyer on the 7th.

Mr. and Mrs. M. J. Henning, veteran monumenters, on the 22nd.

100 Administration

123 Visits by N.P.S. Officials

Mr. and Mrs. Eddie McKee, Mr. and Mrs. Louis Schellbach, Mr. and Mrs. Russel Grater and Mr. Vincent Vandiver made unofficial visits on the 7th to see the Exhibit, and Junior Park Naturalist Steen in an official capacity on the 6th and 7th. (Sure do thank you.)

620 Weather

May 25 to June 1: High 86 degrees, on the 27th; low 45 degrees on the 30th. Precipitation, .03 on the 26th. This is the first measurable rain (?) we've had since the 25th of March, and not a drop since.

The country is very dry and the range is poor. The hot, dry cinders have crippled the sheep, and flocks are reducing in number as well as avoirdupois.

June 1 to June 23: High 103 degrees, on the 19th and 20th; low 49 degrees, on the 7th. On the 12th the mercury rose to 100, and has risen to, or above, this mark daily, except on the 16th, (97 degrees)

180 Publicity

The Coconino Sun, The Flagstaff Journal, Tourist News, and the Arizona Republic carried announcements of the Exhibit.

The Sun and Journal had follow-up articles on the Exhibit.

300 Activities of Other Agencies in Monument

350 Donations and Accessions

The Museum of Northern Arizona paid the cash prize awards for the exhibitors in the Navajo Arts and Crafts Exhibit.

430 Archeology

The P II pick-up has given me more than its usual amount of maintenance, unusual. Little things, that are too small to voucher, keep breaking, and breaking me. If it doesn't two-bit me to the poorhouse it will to the hospital.

Having had no appropriation for minor repairs I have had to let major repairs go unattended also. Besides being a torture chamber it's a death trap, and if I fold it up I hope you will advise me to simply shovel it over and let some future archeologist wonder about the "flexed burial."

General

Both Sallie and I were feeling the need of a short holiday following our four months siege of Arts and Crafts, so Sallie packed off to Carlsbad for a rest. I picked up a bedroll and Clyde and Sarah, and at noon Wednesday (10th) we started for Canyon de Chelly, via Luepp, Oraibi, Pinyon and Chinle, arriving at Custodian Budlong's at 9 p.m.

Bettey and Doug were holding forth when we arrived and Bud was burning the midnight oil en route from Gallup. He came in shortly, with a fine load of new tires.

Next morning we installed the new gums, and with Clyde and Sarah in the "rumble seat" Bud plowed up Canyon del Muerto as far as Antelope House. Retracing as far as the fork, we went up de Chelly as far as the Monument.

All this time Bud is cracking about "the best monument in the world,"

but we didn't get into an argument, simply because I made no reference to paper mache, said nothing about "being done with mirrors," and carefully avoided the use of "gaudy."

We left the canyon and took Clyde and Sarah to see the lovely Chinle vegetal dyed rugs. (Which was one of my reasons for taking the trip.)

Then we took off for home via Chambers and Highway 66. We got as far as Winslow and camped at the TWA Airport. At 12:43 a.m. a big Douglas flew in, and when the passengers got out Miss Judkins, hostess, showed Clyde and Sarah through the ship.

Friday morning when Clyde opened the Forest gate at the Pueblo he said, "Sarah, he no like that Canyon de Chelly for place to live allatime, just Luka-hockai keet Seel." (Wupatki to usDineh.)

The Navajo Arts and Crafts Exhibit

We wish you could have been here to see it, but since you didn't I am going to try to give you a little idea of what it was.

In the hogan, in as much a natural position as possible, were a mano and metate, sheepskins, cooking pots, buffalo rug, and a ceremonial outfit in an old Navajo basket.

Hanging to the vigas were an old squaw dress, a heibitchai costume, cotton woven garters and belt, a quiver of lion skin with red Bayeta trimming, a buckskin quiver full of arrows, a coonskin hat, a shoulder blanket, two rawhide reatas, a marvelous old silver bridle, and Peshlacai's old silver concho belt.

A few of the older men sat in the hogan in their old type apparel. The pajama-like pants with split-seam legs, moccasins, plenty of silver and long hair predominated.

The four ramadas were placed in a quadrangle east of the hogan. Each ramada required 11 vigas, four forked uprights, two 2six axe" runners and five cross members to support the green juniper boughs.

In the first ramada Emmet Peshlecai worked silver. The sides of the shelter were hung with new blankets.

In the second shade were two museum display cases loaned by the Museum of Northern Arizona. One was completely filled with the work of Peter, and the other contained the assorted offerings of other children. The sides of this shade were hung with saddle blanket types, diagonal twills and herringbone weaves.

The next shelter housed a bench and the registration sign and stand. Gladys' large rug filled most of the north side, and the other sides were covered with a shoulder blanket, vegetal dyes, and last-minute entries.

The fourth ramada, I believe, was most interesting. It contained the weavers at work on four looms, also the carders and spinners. Of special interest was the old type belt loom on which the brilliant red cotton belts are woven.

From the vigas we hung borrowed rugs. Museum pieces from M.N.A., a Chinle vegetal from a curio dealer, and some from the Brewer collection

On Saturday morning, after the rugs had been judged by Mrs. Colton and Peshlacai Etsedi, Mrs. Colton opened the eyes of the Navajos with a scrapbook on Navajo Arts from her "Treasure Chest."

This was followed by a pow-wow in the hogan to explain why the blue ribbon rugs were judged as such. Forty-one people were counted in the hogan at this time, and Miss Bartlett said there was room for more.

It was encouraging to see the Indians come from the hogan and go about the ramadas feeling and discussing the quality of each rug.

On Saturday morning, while Charlie Steen and I took snapshots, Dr. Colton took color movies of Lester Little-Singer demonstrating the method of using the sweat house.

Sallie held a pow-wow in the hogan Sunday morning to promote better weaving, spinning, and more vegetal dyes for next year. Peshlacai spoke about 30 minutes, and Clyde the same, all toward the same end. (Much finger shaking at the ladies and a demand for more silver work from the men.)

Miss Bartlett came back Sunday and helped answer the thousand questions the 127 visitors asked.

There were 110 exhibits by 31 exhibitors, 21 of whom received prize money or sold exhibits. Thirty-nine of the 110 exhibits were sold. $250 was collected by the Navajos for the sale of their exhibits.

The prizes were awarded as follows:

Plain weaving:

First - Ada Cody - $5
Second - Gladys - $3
Honorable Mention - Sarah

Vegetal Dye:

First - Peter's Mother - $5
Second - Amy - $2.50
Honorable Mention - Bill Williams' Wife

Twilled Weave:

First - Sarah - $5
Second - Peter's Mother - $3
Honorable Mention - Gladys

Traditional Types:

First - Harry's Mother - $4
Honorable Mention - Martha's Mother

Tapestry Weave (belt):

First - Irene - $1.50

Old Silver:

First - Peshlacai - $1

Children:

First - Peter (Spanish Saddle) - $1
Second - Virgil (Chaps) - .50
Honorable Mention - Ruby (Doll)

The people who have no names in English are identified by their named relatives.

Thank You.

Our first thanks are due to the Navahos of Wupatki Basin, without whom there would have been no exhibit.

A written list of white folks to whom thanks are due would look like Who's Who in the Southwest, so rather than write our thanks we hope to be able to help them in some way any time we can.

About Navajos

When Dr. Bryant and Dr. Colton were here in August, 1934, Dr. Bryant asked Dr. Colton, "What does Wupatki have that no other Monument has?"

Dr. Colton said, "The red-rock pueblo and this view of the Painted Desert," but none of us thought of the Navajos. Several Soil Conservation men have told us Indians in Wupatki Basin are as primitive as any on the reservation.

This is probably due to three things: (1) They are off the reservation and very, very little has been done for them by the Indian Service; (2) the great distance from the nearest trading store (40 miles); (3) their desire to live lives like their ancestors did.

So, with a fine start like that, it has been our aim to keep them (Park Service policy) as they are, un-"Americanized."

Considering the enthusiasm the Indians have shown to repeat the Exhibit yearly, we think we should add Navajo Arts and Crafts Exhibit to Dr. Colton's answer to "what no other Monument has."

Relying on my memory, because no statistics have been kept, I think 100% of the visitors to Wupatki who have been escorted to a Navajo camp have written back expressing thanks. And in many cases they have declared this unexpected side trip one of the high lights of their entire trip.

It is my intention to "furnish" the Exhibit hogan as best I can with our personal collection of authentic Navajo "furniture." This addition to the Monument will enable more visitors to see a Navajo camp without traveling miles over poor roads.

The sweat house can also be made most interesting by framing and attaching the step-by-step photographs of its use.

These photos were made on June 7th, during the Exhibit. Charlie Steen and I took pictures of Lester Little-Singer as he went about his sweat bath. The series starts with the fire-making sticks and ends with the blanket-covered sweat house.

In spite of 30 Navajos in our back yard it gets mighty lonesome around here, and if Sallie doesn't come home pretty soon I might be wishing I'd bought those etchings she wanted.

Sand Painting

A sing was started Sunday night for Grandma Peshlacai, a five day affair with three sand paintings. The ceremony is being held in the fine new hogan on the Monument.

On Friday I was approached by several of the men who asked me to come and help make the sand paintings. (At a dinner party Saturday night Oliver La Farge said I could consider that a great honor.).

Monday morning Mr. and Mrs. M. Henning came to the Pueblo with Mr. and Mrs. Christman.

After the ruins trip we went down to the hogan to see and help with the sand painting. It was a four figure design with many rattlesnakes. After the design was completed I photographed (exposed negatives at it) through the smoke-hole.

As soon as I get this into the mail I'm going to rush back and photograph today's painting and try to get the whole thing on celluloid.

P. S.

Boss, I guess you better put a black mark opposite my name. I had an inquiry, I think it came from a Miss Brown in Tucson. The point in question was could a series of hogan construction photos be obtained.

I do not know the policy with N.P.S. official photos, and I filed the request under "correspondence to which I do not know the answer," and somehow the, well, it isn't ---what I mean to say ---is---I don't --(quit stalling, Brewer, you lost it - you know you did).

The writer of the letter had read last month's report, so I am hoping she will read this and apply to you directly about the requested prints. The negatives should arrive at your office simultaneously with Charlie Steen. I am sorry.

****

SUNSET CRATER

By James Brewer, in Charge

459 visitors registered at Sunset Crater in June, 1936; 1935, 563; 1934, no record.

****

WHITE SANDS

By Tom Charles, Custodian

We have had many interesting visitors the past month. If I may be permitted to review the subject from a fiewpoint of public relations, there were two outstanding ones; jone Bursey, manager of the New Mexico Tourist Bureau and Ward Hicks of the Hicks Advertising Agency of Albuquerque.

Incidentally, these are the two men who were responsible for the expenditure of Governor Tingley's $50,000 fund for state publicity last year and it is said that they will have $100,000 for the year to come. Whether there is any connection between the $50,000 and the increase of tourist travel in the state, each must judge for himself but the Conoco Travel Bureau in Denver reports that New Mexico had 110% increase in tourist travel last year while the average increase for the nation was only 26%,

Colorado 29% and California was taking a slight loss.

It strikes me that these men, in their clever search for tourists, had much to do with the outstanding increase.

Their visit to the Sands was well timed and fortunate. Great clouds of dust banked against the horizon, the rugged Sacramento range was a dim outline a mile or two behind us, clouds of swirling dust darkened the Federal highway in front and when we drove into the sleek, smooth, dustless road of the Monument it stood out in marked contrast. It was really beautiful in the Heart of the Sands that evening, remarkably free from dust or blowing sand.

Joe Bursey's inspiration should have stood at the peak as he viewed the gorgeous sunset, or he should have bubbled over when he beheld the long shadows and the velvet hills but his commercial mind seemed to "hop up" every time another foreign car rolled past, loaded with men, women and children. In 20 minutes a dozen foreign cars had whizzed past, at the "eart of the Sands. Remembering Joe's business and his interest inthe foreign cars, it looked like a frame up.

"Sales Talk" was unnecessary. The atmosphere radiated enthusiasm. The open page of the register ran about like this:

Name	Town	Occupation	Impression
W. H. Buckhart	Dallas, Tex.	Merchant	"Dumbfounded."
Howard F. McGuire	Chicago, Ill.	Adv. Writer	"Mountains of Lux."
Ronald Wilkins,	Detroit, Mich.	Insurance	"The world's Wonder."
Herbert Powell,	San Marino, Cal.	Architect	"Mohammed-bring on the damels."
Peggy Metcalf,	Pontiac, Mich.,	Stenographer	"Never could I image anything so wonderful."
Red C. Vogal,	Cedar Rapids, Ioa		"Like Iowa's snowdrifts."
W. A. Caswell,	Bowling Green, Ky.		"Incomparable."

On and on these "foreign" visitors had raved about the Sands. Seven hundred and sixty had registered in 20 days. As modestly as possible I suggested to Joe that only about 20% of the visitors register here at this "open air" booth.

Messrs. Bursey and Hicks have been very kind to the White Sands in former state publications but with the added favorable impressions of this trip it looks like they may add a few "effusions" in the 1936 manuscript for state publicity.

From the work-a-day viewpoint of the Park Service our outstanding visitor this month was Mr. George Collins, the new regional director on his first trip to the Monument. He flew from Albuquerque to El Paso,

took a birds-eye view of the Sands from the emergency route of the TWA, which takes a short cut through Mockingbird Gap of the San Andres, passes over the "Old Lake Bed" and the "Barbed-wire" landing field which are a part of the unexplored area of the White Sands National Monument. Not long ago we had a visitor who related his experience of running into a storm on this airplane trip between Albuquerque and El Paso and their landing at the "Barbed-wire" airport. It was a wierd and lonely place for the night but the next morning the storm had cleared away. The sunrise and the mirages of the Old Lake were beautiful, the pilot arose from an ideal runway and my friend said it was one of the pleasant recollections in his memory. So much for our present airport.

Mr. Collins and Chuck Richey inspected the new work which is being done at the Artesian well, under the Resettlement Division, pounded a few black golf balls over the alabaster hills, tried out the mineral water, just enough to be sure of what the other fellow is complaining about when he registers a kick on our drinking water, and got a fair idea of the temperature at the Sands on an average day.

There were 1,179 registered at the Turn-Around this month; forty-one states and three foreign countries were represented. The Sunday visitors were as follows

May 24	711
May 31	755
June 7	430
June 14	450
June 21	861.
Total Sunday visitors	3,207.

Our count shows that every time we have a Sunday visitor we have 2½ week day visitors, but as there were five Sundays in this month I have reduced the Sunday count one-fifth in figuring the week day visitors. This gives us 3,207 Sunday and 5,645 week day visitors, a total of 8,852 for the month.

****

CHIRICAHUA

By Wm. Stevenson, Project Superintendent

Following is the monument travel report of the month of June.

During the month 851 visitors arrived in 205 cars, fifteen states and China were represented.

A large percentage of our visitors this month have made an overnight stop in the camp ground.

A great deal of concern has been expressed by some of our visiting technicians, over the monument water supply. June is the hottest, dryest

month of the year in the Chiricahuas and the spring has supplied enough for both tourist and administrative uses. At present we are not able to furnish enough water to supply the entire CCC Camp in addition to our other uses but I feel that I can assure everyone that there is enough water for the monument supply.

Noteworthy Visitors:

Curry Long, regional engineer, US Forest Service, Albuquerque, N. M.
Levant Brown, US Bureau of Public Roads, San Francisco, Calif.
J. H. Brannan, US Bureau of Public Roads, Phoenix, Arizona.
Rex Rice, Douglas, Arizona.

****

CHIRICAHUA E.C.W.

By Wm. Stevenson, Project Superintendent

I herewith submit the following report for the month of June.

Echo Trail has progressed 2500 feet during the month, making a total of 10,000 feet. Work was started on the Massai Point - Balanced Rock trail June 5. 400 feet have been completed this month, making a total of 2000 feet to date.

All poles are set on the Massai Point-Portal Telephone line and six miles of wire have been strung.

Grading of service road and utility area is 85% complete. The surplus materials from this project are being used to dress fill slopes on the Bonita Highway and to obliterate borrow pits.

The Utility Area Wall is 35% complete.

June 11, fifty of our men were called out on a forest fire in Rucker Canyon. Two days were spent putting it out. There have been no fires on the monument to date this season.

Maintenance of Bonita Highway has continued throughout the month.

Visitors for the month:

June 5, Chuck Richey, district landscape architect, Dick Sias, ECW inspector, and landscape architect Clint Rose.

June 14,-15, Landscape Architect Clint Rose.

June 20, George H. Keller, regional master mechanic.

****

CHACO CANYON

By Thomas C. Miller, Custodian

General

June has been a good month in the way of visitors. Our approach road to the north has been impassable part of the month because of the blow sand. It was necessary to make several trips by truck to the Escavada wash and pull the visitors out of the sand. On two occasions the visitors' cars were put out of commission by over-pulling them in the sand. The approach road to the south has been in fair shape all the month, so consequently most of our visitors were sent out that way. At this time the sand is passable, but tomorrow it may not be.

One official trip was made to Santa Fe by the custodian during the month. I left Chaco on the 10th and returned on the 12th. The purpose of the trip was that the University of New Mexico and the School of American Research offered us a nice collection of artifacts, Chaco material, for our museum. A conference was held with members of the museum staff on the evening of the 11th. It was decided at the meeting what was the best material for our small museum here at the monument. Orders were issued by Dr. Hewett to have the material catalogued and packed. Due to a sudden death in Dr. Hewett's immediate family we postponed the packing of the artifacts and they were delivered by Dr. Fisher and Mr. Stanley J. Milford on the 19th. The artifacts are now placed in our museum.

The morning of the 11th I spent at Bandelier National Monument looking the place over with Mr. Hendron and Mr. Chase. I did not know the place because of all the new developments. I surely enjoyed that trip and the all too short visit with Hendron, Chase, and Peterson. I visited Earl Jackson on my way home on the 12th. Boss, it is my opinion that that custodian just went to bed to take a rest. He looks better than I have ever seen him look. I told him so and he admitted that he had gained 20 pounds. Here's hoping that Earl is up and back on the job real soon.

Travel:

Registered by cars 643 people arrived in 219 cars coming from 18 states, the District of Columbia, and Hawaii. Museum and Guide service was rendered to 239 people in 55 parties during the month. A total of 7,330 minutes was devoted to field and museum trips.

Weather:

Maximum for the month was 99 on the 18th. Minimum 39 on the 28th of May. Precipitation .75 inch was recorded for the month; the greatest in 24 hours was .28, May 29.

Maintenance:

The two cattle guards on the main road through the monument were

cleaned of blow sand during the month. The method used in cleaning the cattle guards was: The new hydraulic dump truck was used for a tripod, then a borrowed chain hoist was used to raise the 1500# steel rails. After the rails were raised and blocked, two-inch water pipe was used to roll the steel out of the way so that we could get in there and shovel the sand out. The sand was used to fill up mud holes near headquarters. This new dump truck is very useful in many ways.

Activities of other agencies in the Monument:

The University of New Mexico and the School of American Research headed by Dr. R. G. Fisher, Mr. Stanley J. Milford, and Mr. Gordon Vivian began work on Casa Rinconada June 20. Mr. Vivian is supervising the repair and the roofing of one of the greatest kivas in the Southwest at that ruin. The Kiva measures 72 feet in diameter. It is the largest and finest thing ever undertaken in the Chaco by this school. When completed, Boss, this structure will make the great Kiva at the famous Aztec Ruins National Monument look like a child's play house. This Kiva of Johnwill's has been the envy of all eyes in northwestern New Mexico for two years and you can't imagine how much pleasure it gives me to see this work pushed to completion this summer.

The University's headquarters building was near enough complete that the kitchen, dining room and cellar could be used by their staff. Their sleeping quarters are a bunch of tents stretched up near the canyon wall a short distance from their kitchen. These tents will be discarded when their buildings are finished.

Rodent Control:

A. E. Borell, wildlife technician, completed his work and departed on the 13th. The carbon bisulphide gas pump and five gallons of gas were left here at headquarters for use if needed around the dikes on the canyon floor built by the Soil Conservation Service. Mr. Borell completed a good piece of work here in this monument by exterminating the rodents around our dikes. No serious damage to birds or rabbits was noted in connection with this work.

Personnel:

Homer F. Hastings, Bayfield, Colorado, was put on the rolls as guide May 27, pending action being taken on the appointment for the new position of ranger-historian for this Monument. Mr. Hastings is doing a good job guiding our visitors through the ruins.

Special Visitors:

Mr. Joseph A. Bursey, director New Mexico State Tourist Bureau, was an interested and interesting visitor, June 2. Mr. Robert M. Patterson, Merion, Pa., Mr. V. W. Balderson, Albuquerque, both of the U. S. Bureau

of Indian Affairs, visited the monument on the 4th. Mr. A. S. Coggshall, director State Museum, Springfield, Illinois, was here on the 5th. Mr. and Mrs. G. F. Bowser and son, Warren, Ohio arrived on the 13th, and departed on the evening of the 15th. Mr. Bowser is a lecturer, photographer, and world-wide traveler. The University of Utah Expedition headed by Dr. A. M. Woodbury, formerly naturalist at Zion National Park, arrived on the 15th and departed on the 16th. Mrs. Chet Markley and Mrs. Jess Faha, Mesa Verde National Park, arrived on the 18th and departed on the 22nd.

Museum Contributions and Loans:

The Aztec Ruins presented us with a very nice tree ring chart June 6. The University of New Mexico made this monument a loan mentioned elsewhere in this report.

Soil Conservation Service:

This Service did considerable planting around headquarters area and along the earth dikes on the canyon floor during this month. Approximately the following amounts were used:

105# Oryzapsis heymanoides
2000# Western Wheat Grass or Blue Stem
108# Sacaton.

All of the flood water diversion dikes were planted with a mexture of Sacaton, Wild Rice, and Blue Stem.

Approximately one thousand feet of earth diversion dikes were built, three rock and wire sausage dams constructed, and three cable fences were built in the Chaco wash for revetment purposes. One cable fence was below Pueblo del Arroyo, the second below the University of New Mexico windmill and the third between the ruins of Hungo Pavi and Chetro Ketl.

****

CASA GRANDE

By J. Donald Erskine, Park Ranger

With summer really upon us, travel dropped off this month to a low for the year of 1,661. This figure includes two groups of CCC boys totalling 80, and one of 36 Hopi school children from Hotevilla. On June 7th we had the pleasure of meeting Evon Z. Vogt from El Morro who signed our register while here on a visit to headquarters. Most welcome was a visit from H. B. Hommon of the U. S. Bureau of Public Health on June 20 and 21. Mr. Hommon was looking over the situation preliminary to the installation of our new sewer system.

After a very pleasant first week in June the thermometer went up and stayed up. Our day temperatures have run from 88 on June 1 to 116 on June

18 with 14 days over 110 degrees. Night temperatures varied from 49 degrees on the 1st and 5th of June to 83 degrees on June 23. Two stormy days brought .01 of an inch of rain on May 26, and a trace on June 22, not enough to give any relief from the heat.

Early in the month Virginia Winter went East for a vacation and rest. A few days later Custodian Winter began to suffer from stomach trouble and on June 14 left for Chicago to join Virginia on his annual leave. It seems apparent that Jack doesn't make a very good bachelor. Assisting in guide duty during the absence of Custodian Winter are Clarence Cole, who is a student technician for the summer months, and Cliff London who is waiting for word which will shift him to Oklahoma City for engineering work. While we are certainly glad to have Cliff here, we hope for his sake that his prospective appointment will soon materialize.

As mentioned previously, we finally see the end to our troubles with the sewer system. Money has now been made available for the construction of a new and adequate sewer system which should be in operation before the summer is over. In the meantime, we must continue the make-shift methods which have given us so much trouble. However, the make-shift system is now working much better than before, thanks to the efforts of Addison Pinkley and Cliff London who gave it a thorough going-over two weeks ago.

The prize remark for the month came from an elderly gentleman as follows: "Well, sir, what these old people didn't have, ain't it?" Speaking of visitors, it occurred to the Boss and myself the other day that visitors to Casa Grande get an additional service here that probably is not duplicated in many other monuments or parks. Each car that drives up to the parking area is given a thorough cleaning by three or four Cactus Wrens who painstakingly remove every bug they can find, not only from the radiator, but from other parts of the car as well, including the inside.

The young Say Phoebes which hatched on May 23 are now becoming quite expert in their flights through the rooms of the Casa Grande. The Owl family is still around enduring the heat as best they can, though, they apparently don't like it very much. No more snakes or Gila Monsters have been seen, altogether a rather uneventful month from the wildlife standpoint.

We were all much amused by an advertising folder which we received a few weeks ago from an Eastern company trying to sell us a combination lawn mower and snowplow. A little snow would feel mighty good just about now.

****

TUMACACORI

By Louis R. Caywood, Custodian

We learn with sadness of the recent death of Frank Hands, a true pioneer of the Southwest. Mr. Hands was a great nature lover and at his

ranch in Pinery Canyon in the Chiricahua Mountains many valuable observations were made. At some time or other almost all well known ornithologists have visited Mr. Hands who was always glad to drop his work and accompany them to parts of the Chiricahuas where rare birds could be seen. It was Mr. Frank Hands who, in 1917, observed the Thick-billed Parrots migrate into Pinery Canyon from Mexico. Mr. Hands was also the proud possessor of a Thick-billed Ani, a bird rarely seen in the United States. Dr. Bryant and I had the privilege last summer of visiting the ranch and seeing Mr. Hands' collection of mounted birds. I am sure that all who knew Mr. Hands will mourn the passing of one of the finest and kindest pioneers the Southwest has ever known.

The weather has been warm, but there is usually a breeze that is cooling. The Mission is always cool inside. With the rainy season only a few days off, we have something to look forward to, as on St. John's Day the rains are supposed to begin, according to local people.

Visitors for the month of June numbered 911. Of these 831 were personally conducted through the Mission while 80 only used the facilities offered. This number is an increase over 843 for June, 1935, and 764 for June, 1934.

Noteworthy visitors included Don and Marie Erskine from Casa Grande National Monument on June 2, and Cliff and Detta London from Headquarters on June 3. We enjoyed their visits very much and hope they will come again soon. Father Victor Stoner, new president of the Arizona Archeological and Historical Society, Tucson, was an interested and interesting visitor to the Mission on June 4.

From spare funds I was fortunate enough to obtain a small steel filing cabinet with all accessories and I want the fellows in the field who do not yet have a filing cabinet to know that they can fill in the evenings setting up a filing system similar to that used at Headquarters. Martin and I have spent hours fitting all the letters, memorandums, orders, etc., into the proper folders and there are still stacks of material to be filed. After we feel we have finished we would like to issue an invitation to someone from Headquarters to come down and check all our mistakes.

The following article appeared in a recent issue of "Pathfinder" edited in Washington, D. C., under the title GERMS "SLEEP" 250 YEARS:

"When it was suggested a few months ago by Dr. Carrel that it might some day be possible for man to sleep for centuries in suspended animation, it raised quite a stir in the scientific world. However, similar sleeps are even now old stuff to the simpler forms of life. Dr. Ira B. Bartle, of California, recently reported taking a colony of soil bacteria from the wall of the Tumacacori Mission in Nogales, Arizona, where they had been sealed for two and a half centuries. Although these bacteria had been in a state of latent life since sealed in the wall, they were revived and began

to live and multiply normally. Dr. Bartle explained that the ability of bacteria to survive centuries in this state is due to the fact that when they are removed from the presence of oxygen the walls of the tiny cells thicken until the life within is protected against nearly all conditions except fire.

"Bacilli, those tiny organisms too small even to be seen with a microscope, can also endure some pretty harsh conditions. Experimenters have kept some for weeks in temperatures close to absolute zero without killing them, and tuberculosis bacilli are said to have been found alive in Egyptian mummies."

I thought the above might be of interest to those following the study recently made by Dr. Bartle.

A census of the 40 mesquite trees planted early this spring by Mr. Boundey shows that there has been a loss of 8 or a 20% mortality of the young trees. These were given to Southwestern Monuments by the Boyce-Thompson Southwestern Arboretum at Superior, Arizona. I have watered and fertilized them and am certain that if the remaining 32 survive this summer they will be healthy trees. Some of those which died had been plant in ground infested with pocket gophers. Probably the roots were eaten by these rodents.

There are a great number of pocket gophers on the grounds and they may prove serious as time goes on. There are also a few gray squirrels which have destroyed a number of bird nests including one Gambel Quail nest here on the Monument. A colony of round-tailed ground squirrels have made their home in the ruin mounds south of the church.

A very low water table now exists in the San Cruz Valley. The monumen well pumps dry in about five minutes of steady pumping. It soon fills, however, if the windmill is turned off for a short time and then turned on again.

Birds banded during the month are as follows:

Arizona Crested Flycatcher	1
Arkansas Kingbird	1
Bendire Thrasher	3
Cactus Wren	2
Canyon Towhee	3
Phainopepla	3
Roadrunner	1
Say Phoebe	3
Western Mockingbird	7
Western Mourning Dove	2
White-rumped Shrike	4
Total	30

Now that nesting season is just about over bird banding will probably pick up. A great many immature birds are now to be seen on the monument and I hope to be lucky enough to band them soon.

****

RAINBOW BRIDGE

(Extracts from letter from Wm. & Katherine Wilson of Rainbow Lodge)

To say that we enjoy the monthly reports of Southwestern Monuments is putting it mildly. Bill and I read every word. We did not receive the February number, and don't want to complain but we hate to miss anything. We are surely glad to add them to our small collection of books and pamphlets on the Southwest.

Long ago we should have told you how very much we enjoyed yours and Nancy Margaret's hospitality. But better late than never. And then, too, we came away with a much better idea of Casa Grande than ever before, thanks to Dale's expert guidance.

We can safely say that it has been a slightly better spring up here than last year. In fact up to date we have personally guide 27 people to Rainbow Natural Bridge. 39 others have seen it via Snawk's Mares, 33 of the latter being members of the Hiking Club from Northern Arizona Teachers College with Robert Powers their faculty sponsor on their tri-annual trek to the Bridge. This compared with 20 guided last year and eight going on their own is some improvement.

Two Biological Survey men are on Navajo Mountain now catching butterflies. They caught 600 in a few days, which is easily explained, we think, for the reason that the "tent caterpillars" are about to take the Quaking aspen. They were first seen up there last year and now the extent of their depredations is appalling. Bill says not one live aspen is left at Soldier Seep Springs. There were a few at the Lodge in the poplars and cottonwoods but we soon made an end of them. We wish that something might be done.

We've made a few improvements this spring, the chief one being our new Electrolux refrigerator, the largest we could buy. I wonder how we got along without it, and the hottest weather still to come.

****

GRAN QUIVIRA

By George L. Boundey, Custodian

Visitors for the month total 309. As all the local people are busy with planting, this number represents principally tourists.

We have had many interesting people during the month; several made

camp and spent several days with us. Among our campers were Mr. and Mrs. Henning whose visit we enjoyed very much and hope they will come back again.

When we first started to pump from our new well, the water would be exhausted after an hour of pumping. About the time Mr. and Mrs. Gipe left we could pump an hour and a half. For the past several weeks the water has been very cloudy and full of a fine sediment, but I notice the flow has increased and that the water is losing its bitter taste. Owing to a coating of creosote on the inside of the tank, this taste has been noticable but is gradually disappearing. I believe in time the water will be quite palatable.

The morning of the 15th a party of surveyors started a survey for a road between Gran Quivira and Carrizozo with the intention of making it a direct route between El Paso and Santa Fe. The 1940 Coronado Centennial is doing much to improve the roads in New Mexico.

One of the Harvey Busses with a Courier who used to visit us at the Aztec National Monument made us a visit last week. The improved roads will do much to bring visitors into our part of the country.

Mr. Outry, who helped Mr. Gipe on the pumping plant, was struck by lightning the other evening and instantly killed. He got out of thecar to open a gate and lightning must have struck the wire fence at some distant point just as he touched the gate.

Our bird baths are increasing the number of birds in this vicinity until nearly every tree has at least one nest.

This country is so overgrazed by cattle and sheep our monument is like an oasis in a desert where it comes to wild flowers. At night the air is so fragrant from the many varities of blossoms one almost hates to waste his time in sleep.

The summer climate is so delightful here, if we had a river or lake neary by it would be one of the greatest summer resorts in the country.

****

PIPE SPRING

By Leonard Heaton, Acting Custodian

The weather has been the most talked of subject up here this past month, and it has been a hot one, at that---temperature reaching 108 out in the Pipe Valley, Fredonia, Arizona. June 21 was 106 and as a result we have some very stormy looking clouds this morning which we hope will do their stuff and give us rain.

We are very dry up here; most of the green has been browned by the

hot sun. Most of the water holes on the open range are nothing more than mud holes, and the living springs do not supply all the water the stock need or perhaps it is that some are overstocked and others could stand to have a few more.

Our travel has amounted to about the same as last month and as comparison I submit the following:

May	Guided trips	16	Present	81	Local	275	Estimated	
June	" "	28	"	84	"	362	"	
Increase		11	"	3	"	87	"	

I believe people have shown greater interest in the place and since I have been keeping track of some of the questions asked by the visitors I have begun to find that I have been leaving out some the information I should include in the talk on the Monument. Consequently, I am in favor of the suggestion given out by Bob Rose last spring, and I had hoped to get some of these questions typed and sent in this month, but the last few days I have been working with visitors, and irrigation so much that I have not gotten them out.

I have used and am using three scouts in some light work here on the monument, doing clean-up and other odd jobs that I haven't gotten around to get done myself, and these boys are trying to earn some money to pay their own way to the summer camp for boys in July.

The ECW work has progressed very well this month. Have had the eight men all the time and the use of a truck. The boys have made the necessary filling of the parking area and road. Grading is complete and about 1500 yards of gravel on the east entrance road would have no doubt finished the graveling but they broke the truck and were given a stake in which they are hauling flagstone for walks, and stone for the guard rails.

I am happy to report that the CCC boys have stopped their raiding on the birds and animals on the monument; also they are realizing the benefits the Park Service is trying to give them by protecting nature as it is and was.

The boys have finally gotten the swimming hole to hold water and about three quarters full and to see them after work hours you would be reminded of the old water hole near town on a hot summer day. There has been as high as 50 or more boys in the pool at once.

And how the girls wish that the camp would move out for a while so that they could take a swim. I told them the pool will be there when the camp goes but it would receive a remodeling to remove some CCC handiwork and make it more natural.

Mrs. and the children have been visiting with their folks at Alton,

Utah, the past two weeks and returned yesterday. All the children have been coming down with the chickenpox; otherwise we are okay.

****

WALNUT CANYON

By Paul Beaubien, Ranger

1441 visitors registered this month. 1082 are listed as "educational contacts," while the other 359 could only make use of the self-guiding facilities.

There were 29 overnight camping parties. After a week's stay, the M. J. Hennings are leaving as this goes to press. Mr. and Mrs. Lowell Christman and daughter arrived with the Hennings, and left yesterday. They are wonderful people who you will be glad to meet at Casa Grande this winter. Captain V. E. Lake, U.S.A., retired, who has been repeating frequently in the Southwestern Monuments since 1923, has been camping here for several days. He has a book shelf of information on photography, so I'm profiting greatly by his stay.

Park Service visitors include Victor H. Cahalane, A. E. Borell, and Charlie Steen. Mr. E. J. Boundey, a cousin of my old friend George Boundey was here for a few hours on the 7th.

Three birds were banded during the month; a Western Mourning Dove, a Red-shafted Flicker, and a Western Robin. I forgot to report last month that Don Erskine had banded a Black-headed Grosbeak and a Western Tanager.

Mr. Alfred Whiting, curator of Biology at the Museum of Northern Arizona, has spent several days making a collection of the flora of the monument. Due to the very dry spring, he is having difficulty in gathering representative specimens. But with a shower on each of tho last three days, we may have some flowers yet. We are planning to send two sets of plants to the Boyce-Thompson Arboretum with the hopes of having one set returned mounted.

The phone line has been repaired by the Forest Service, so I can now be called by the "lookout."

****

MONTEZUMA CASTLE

By Martin L. Jackson, Custodian

Visitors

Visitors for the month have numbered 1,212. 558 of this number made the climb into the Castle. This rather small number of visitors to the monument during the month can be laid to a conspiracy of conditions and

events found under "Weather" and "Roads."

ROADS

The road surface throughout the valley while in a good state of repair, is extremely dusty. State route 79 from Flagstaff thru Oak Creek Canyon to Prescott, which has been under repair for the greater part of the spring is in fine shape now.

Signs

During the past week I have erected seven signs at the most strategic points of entry in the valley. According to an official of the State Highway Department, more thorough directional signs will be erected by them in the very near future. They seem very willing to cooperate with us in this matter.

Weather

The weather during the past two weeks has been the hottest I have ever seen in the Verde Valley in June. Visitors are very reluctant to leave the main highways in such weather and I can hardly blame them. For the last six consecutive days the temperature outside the museum building under the shade of the trees has been above 109. In the past the hottest weather has been in July and August. I hesitate to think what the thermometer will register this year. Reports from along State Highway 79 and U. S. 66 indicate that many people are traveling at night to escape the heat.

Personnel

On June 22 Mr. Curtis Cox, of Flagstaff, Arizona, assumed duties as temporary ranger here to replace Charlie Steen who left for headquarters on the evening of the 21st to "escape the heat." Mr. Cox has promise of becoming an excellent ranger. He is qualified with an A.B. degree from the Flagstaff Teachers College and a year of southwestern archeology from the same institution. Mr. Fish is expected back within the next few days and while we don't like to see him leaving the monument, we are glad that he is being transferred to a forested region where he will be more at home.

Special Visitors

On the 15th of the month Irvin S. Cobb spent an enjoyable two hours with us. We found him to be equally as entertaining in the flesh as he is in the better magazines and on the screen. We would like the opportunity of seeing more of him. On the same day we had two boys directly from Paris, France. One of them said: "We have come all the way from France to see this. Tell us about it." They left well satisfied.

Nature Notes

Following is a seasonal check list supplied by Norman R. Jackson. He states the report is not at all complete but gives additional dates concerning nesting of birds and migrations.

Piranga hepatica (Western Tanager)

Pair of birds observed near museum---------- May 26
(This bird is an annual summer resident)

Butorides virescens anthonyi (Anthony Green Heron)

Single bird observed at lower edge of monument----May 29

Mergus (Americanus) (?) American Merganser

Two birds continually on monument flying up and down the creek. Evidently nesting as in previous years high up in the castle cliff----------May 1, June 2

Pyrocephalus rubinus mexicanus (Vermillion Flycatcher)

Two mailes and one female observed near creek in front of museum building. I am convinced these birds nest in the valley, although the proof is lacking ----------May 3 & 9

Cardinalis cardinalis superbus (Arizona Cardinal)

Three separate pairs seen on monument in thick brush. Cardinals have nested in the valley in past years and probably continue to do so---------May 19

Baeolophus wollweberi (Bridled Titmouse)

Strangely enough these birds were with us for about a week in the middle of the month. This is entirely contrary to previous records of these birds in the valley. They can usually be seen in the early spring and fall but never in June. Possibly this is just a chance migration----------June 11-17

Mimus polyglottos leucopterus (Western Mocking Bird)

These birds are very numberous now and later in the summer will be the most abundant bird on the monument. One nest observed in mesquite bush in southern tip of monument, containing two young----May 31.

Dendroica aestiva sonorana (Sonora Warbler)

Very numerous in mesquite and sycamores in vicinity of museum building ----------May 10-23

Catherpes mexicanus conspersus (Canyon Wren)

Estimated eight or ten birds in cliff near Castle. Young bird in immature plumage captured in museum building ----------May 15-19

Phainopepla nitens (Phainopepla)

Several pair seen on the monument. They nest here but I have not been so fortunate as to find a nest. Last year they were here from May 14 to August 1 ----------May 3

Icterus cucullatus nelsoni (Arizona Hooded Oriole)

As abundant as in previous years. Several nests in sycamores on monument ----------May 7-30

Lophortyx Gambeli Gambeli (Gambel quail)

Nest observed in mesquite thicket in southern part of monument. Five young recently hatched ----------May 21

Sayornis Sayus (Say Phoebe)

Three young hatched in nest in eave of Ranger's residence. Phoebes have nested in the same nest in previous years--May 16

Sayornis nigricans (Black Phoebe)

Nest with four young recently hatched seen under eave of old bridge at southern extremity of monument --------May 20

Bubo virginianus palliscens (Western Horned Owl)

One adult bird seen flying up creek near Castle cliff---May 29

Zenaidura macroura marginella (Western Mourning Dove)

On 24th of May nest observed on east side of monument. Two young (immatures) recently out of nests seen at museum building ----------June 22

Auriporus flaviceps flaviceps (Verdin)

Male seen in vicinity of old nest in Mesquite bush April 5. Several old nests seen in thorn bushes across creek from Castle proper on May 20.

Further information along this line will be forthcoming later in the season perhaps.

****

AZTEC RUINS

By Johnwill Faris, Custodian

We find that during June we were a little above the average. Visito for the month total 1,323, which is quite a number over the same period for last year. It is most interesting to note that a decided visitor dro has been noted the latter part of the month which is almost perfectly tim with some road work being done on the Shiprock-Farmington road. This wor is expected to continue the greater portion of the summer and it is very probable that we can expect a drop of a number of visitors throughout tha time. We expect this completed road, however, to bring us many more visi tors when it is complete, since this particular section has always been a stretch to be detoured if possible.

The Durango Archeological Society held its last meeting for the summer at our monument on June 2. They made a particular study of "Textiles and Cordage," and it was the pleasure of Ranger Hart and myself to arrang a special display of these materials for the group. We were well repaid for our efforts; a very interested group spent a most enjoyable evening and were high in their praise of our textile specimens and also very appreciative of the National Park Service making such study possible for th We hope that they will come back and see us, and in fact we have their promise to return several times and carry out any particular line of study they might care to pursue. Another special party met at our monument June 4, and yesterday we had the pleasure of entertaining a number of boys and girls from the State orphanage. We enjoy these special groups and are proud that so many see fit to stop off with us. A rather strange coincidence made possible my showing through two ex-rangers and my present one all in the same party. We had a regular Park Service reunion for an hour or so. It was quite interesting to go over some of the old methods and manner of handling the monument and comparing it with our present method.

Two very loyal Park Service families stopped in with us this month. One the McCords from Pasadena, and the other the Bowsers from Ohio. We had hoped to add the Hennings to this list but as yet they have not been by this way.

Nothing out of the ordinary has taken place this month; plans were formulated whereby we should have our parking area well paved when our

next report comes out. We have also made plans where the N.Y.A. is to supply at least one and possibly two boys to the monument and these boys will be a lot of service to us. We in turn are to help them develop themselves when and whereever possible.

The month as a whole has been dry and hot. Not hot to you desert dwellers but hot for us up here.

The Monument wishes to express its appreciation to the Educational Division for supplying us with the leaflet on the ruins. These will fill a need of long standing and we do appreciate them. I wish that at odd times, or whenever possible, we might be supplied more of our seven page booklets. It seems so much more in keeping, but we do not want to appear dissatisfied in the leaflets. They are fine but we would like something better at the first chance we have to get it.

So,Boss, in closing June we also close another fiscal year. The Washington Office, the various divisions, our Southwestern Monuments headquarters, and yourself as Superintendent have been most generous and cooperative. For this generosity and cooperation we are most grateful and express our sincere thanks.

****

TONTO

By Woodrow Spires, Ranger

I noticed last month our friend Tom Charles led off with, "The Lord still smiles on the Great White Sands." I can go him one better, "The Lord smiles warmly on Tonto."

The weather has been rather warm with the temperature reaching 103° once, yet the nights are surprisingly cool. Rain for the month almost wasn't, only .12 inch being recorded.

Travel for the month started off with a bang but soon took a reversal of form and from the 9th till the 18th there was absolutely no travel, probably due to the Texas Centennial. Total visitors for the month were 30 fewer than last month, but 43 more made the trip to the ruins.

The following figures are derived from SWM Stencil No. 16.

Total visitors at the Monument	335
Total time guiding	3845 Minutes
Total visitors taking field or ruins trip	222
Total number of field or ruins trips	46
Total time field or ruins trips	2895 Minutes
Average time field or ruins trip	63 "
Average group field or ruins trip	4.82 persons
Total visitors museum trip	195

Total museum trips	57
Total time museum trips	950 Minutes
Average group museum trips	3.42 Persons
Average time museum trips	16 Minutes

There were no trips to the Upper Ruin this month.

All officials and other newsworthy visitors eluded the monument this period.

I received a very nice letter from Ruth and Millard Henning. This I am very proud of as from a visitor's standpoint I know no one who is any better qualified to judge a monument than they are. Following is a cut from their letter: "Our visit to Tonto is one of the happy memories of this trip and for that we thank you. Best regards from us both and don t let the dudes get you down."

Ruth & Millard Henning.

I believe I can say this has been the dullest month I have witnessed here; nevertheless, I have accomplished quite a lot especially in the strengthening of the walls in the Lower ruin. This is also the banner month in trail work.

This is going to come to a rather abrupt end as the mail is due any minute.

****

EL MORRO

By E. Z. Vogt, Jr., Acting Range

Hope this manuscript reaches you in time to get in the Monthly Report without making the printers work after hours to cut the stencils for it as they did last month. June has been a very enjoyable month and travel has been good, particularly during the past week.

Weather and Roads

The weather has been fair, hot, and dry all month with the exception of the 22nd when we had a nice shower. It rained hard enough to run water into the Cove for which I was thankful because the pool was getting frightfully low.

The approach road from Gallup is in good condition. The road from Grants is passable except for a five-mile stretch which is in terrible condition---full of high centers and mean rocks, and according to some tourists it is impassable. They could never make it thru again. Once was enough.

The signs are down in a few places. It seems as though we are forever

putting up signs and travelers are forever tearing them down, post and all. They use the posts to pry themselves out of the mud and then take the rest of them home and chop them up for firewood.

I have painted several new signs and intend to motor over to Grants Friday and put them up. I should certainly hate to have travelers run out of pry poles and firewood!

Travel

Visitors for the month number 223. An appreciable increase over last month's travel. Surprisingly we have had only three parties of overnight campers all month.

Newsworthy visitors include J. B. Hamilton & wife, George P. Hommond, formerly of the University of Southern California and now of the University of New Mexico, Agapito Rey, of the University of Indiana, Gilberto Espinosa, and party of three from Albuquerque and Las Vegas, New Mexico, and George Andrew Byrns from Fairbanks, Alaska. This is the second visitor from Alaska this year.

Jim Hamilton & wife were in on the 9th. Mr. Hamilton and I went over all trails, took pictures of disintegrating steps, and discussed ways of improving the trail in washed placed.

Mr. Hammond and Prof. Rey are scholars of Spanish history and it was they who translated Luxan's diary and account of the Espejo Expedition into the Southwest and edited the first volume of the Quivira Society which contains the translation of the old conquistador's diary. These two gentlemen spent nearly a half a day at the monument and I learned much from them.

Gilberto Espinosa was also an intensely interesting visitor. He is to be one of the directors of the Coronado Celebration in 1940, and as this monument is to be one of the features of the Celebration, he wanted to go over the monument and carefully examine it with an eye to 1940. He spent the better part of the 21st at El Morro. Mr. Espinosa translated Villagra's History of New Mexico. This translation appears in the fourth Quivira Society volume.

Flora and Fauna

The month has been so dry that there have recently been three forest fires within ten miles of the monument. Two were on the south slope of the Zuni Mountains across the valley from El Morro. I could see the smoke and at night the flames could easily be seen. The third fire was ten miles south of the Rock on the high ridge between here and Atarque. The fires were all put out by the McGaffey forest ranger and a squad of fire fighters from Ramah.

There are no flowers in bloom yet except the spiderwort and sweet clover which is beginning to send delightful aromas into the cabin here making the ranger think of many things more romantic than writing a monthly report!

Just to inform readers that El Morro is also a good place to study ornithology, the following list is submitted as birds observed here during June:

Western Mourning Dove
Cliff Swallow
Western Mocking Bird
Arkansas Kingbird
Cassin Kingbird
Golden Eagle
Turkey Vulture
Mountain Bluebird
House Finch
Desert Sparrow Hawk
Woodhouse Jay
Pinyon Jay
Western Meadowlark
Red-shafted Flicker
Western Nighthawk
Western Robin
Northern Violet-green Swallow
Lewis Woodpecker
Canyon Wren
Rock Wren
Rocky Mt. Hairy Woodpecker

About noon last Saturday I heard a loud commotion on the hill above the cabin. It sounded like a riot, but on running up to investigate, I found that one of our eaglets had made his first catch, a prairie dog, and was certainly telling the world about it. The two grown eagles were flying around overhead squawking their approval and praising the young one. I didn't have a camera, so I decided to catch the eaglet and put him in the cabin until someone came along with a camera. He was too young to fly very well, and I was able to capture him after a short chase. I carried him by the wings so his mean beak wouldn't grab one of my fingers. When I put him in the cabin the first thing the little fellow (I say little, but he had a wing spread of 5½ feet) did was to jump upon the desk and on top my typewriter cock an eagle eye at me, and await further developments. It was then that I named him Oscar.

That night a party of campers came in and the next morning we took some shots of him tearing apart the remains of the prairie dog. As soon as Oscar was turned loose he went up to the water cove, jumped over the concrete dam to get a drink, and then couldn't get back over. He squawked all afternoon about it and tourists got quite a thrill out of seeing a live eagle when I showed them the water cove. But he kept making such a fuss that I finally went up and helped him out.

At the time of writing Oscar is on the north side of the Rock below the nest screeching loudly for good. One of the adult eagles will undoubtedly bring him a rabbit or snake after while and shut him up. However he is going to be a curiosity for visiting tourists for a week yet, because he still cannot fly up to the nest. I certainly wish I had a bird band to put on the eaglet. It isn't every day that one has a chance to

band an eagle.

After thinking for over ten years that there was only one kind of swallow darting around El Morro's pinnacles, I find after daily observation that we have two species here. We have cliff swallows which build the curious mud nests under ledges and overhangs along the cliff, and the northern violet-green swallows which build their nest of sticks and feathers in crevices in the cliff.

It is difficult to distinguish between the two swallows. Their flight is alike except that the violet-green swallows fly at a much greater speed and their underparts are pure white contrasted to the brownish underparts of the cliff swallows. From above the gorgeous green and violet colors can be seen on the violet-green swallows, and the authors of "Birds of New Mexico" do not exaggerate a bit when they call this swallow one of the most beautiful of western birds.

The mocking birds are numerous this year. They mock the Woodhouse Jays and Kingbirds and occasionally my whistling. I expect one of them to break out and whistle the "Red River Valley" one of these days.

I have found that the water cove is an ideal place to observe bird life. I believe that certain birds come for many miles to drink water there. Early in the morning and late in the evening is the best time to see the birds. Swallows dart down and scoop up a mouthful of water on the fly. The red-shafted Flickers and Kingbirds seem to be the boldest. They fly in and drink when visitors are in the rincon. The Mourning Doves are quite timid though, and the Mockingbirds won't even come near. They just sit in a tall pine tree and scold you for being there.

Monumental Improvements

If the administration building is to be built on the south side of the rock, I believe that it would be a good thing to move our entrance gate down to the eastern gate of the monument. The entrance road could then be built so as to have all visitors drive to ranger's cabin. The register should also be moved around to the cabin. This would make it more nearly possible for one man to contact all parties. The ranger is certainly expected to work on off days and not sit in the shade on the north side and wait for visitors. As it is now people will not come around to the cabin even though there are several signs telling them that the ranger is on duty and to please drive to ranger's cabin where a sign on the door would inform them that the ranger is at work on trail and to please sound horn loudly. Instead they stop at the register and go around by themselves, reading the translation cards which give nothing but the bare facts---no history between the lines and no connected story.

I cannot see cars drive in from the south trail and I never discover until evening when I go around to the register that two or three parties

have been in, turned around at the register, and then gone on to the ice cave. Undoubtedly they came in, registered, and decided not to hunt up the ranger but to go around unattended. After seeing the first inscription they tire and begin to wonder why they came anyway, over those terrible roads from Grants. The roads couldn't have been any worse in the time of the Spaniards, and at least those old ox-drawn carretas had a better chance to get over high centers.

The consequences are that they go away feeling like the farm boy who got gypped in a carnival side show. There was no one to really show them the interesting features of the monument, reveal the old Rock's secrets, and convince them that El Morro is the most interesting National Monument in the Southwest.

These last few paragraphs might be summed up in a simple sentence: We need a revision in our system of handling visitors, and probably the first step in the right direction would be to move the entrance gate to a handier place.

On off days I have worked and repaired the south trail from the water cove to the south ruin. I have also been experimenting with copperas in an attempt to get a fitting color on the concrete steps. The first flight finally turned a desirable color after the last application, but I have not had much luck with the upper flights yet. After the next application which I intend to make stronger, I believe that their appearance will be much better.

Inscriptions

Mr. Hammond and Prof. Rey thought that A. W. Barth's translation of the Silva Nieto inscription was correct, but they disagreed with the present translation of the Martinez inscription. They are going to borrow a set of El Morro pictures from the Washington office and work out a better translation of this inscription.

Mr. Espinosa also disagreed with the translation of the Martinez inscription and did not believe that any previous translation of the Silva Nieto inscription was correct. After a lengthy discussion on this matter, I finally loaned him a Park Service picture of this inscription so that he could work out his translation of the last two lines and send it to me.

General

I do not believe that the Gallup High School murals have been mentione yet in the monthly report. These seven murals which hang in the assembly hall in the Gallup High School were painted by J. R. Willis, noted southwestern artist, and our representative of Spanish exploration and conquest in the early Southwest.

The first one is a map showing the routes of the conquistadores across the Atlantic, through old Mexico, and across the Southwest. The second shows Cabeza de Vaca and the negro, Esteban, struggling across a Texas desert. The third mural depicts Fray Marcos de Niza as he looks at the Zuni pueblo of Hawiku from a distant mesa. As he uses his imagination and looks at the adobe walls in the setting sun, the pueblo certainly looks like one of the Golden Cities of Cibola. The fourth one shows Francisco Vazquez de Coronado and soldiers taking the pueblo of Hawikuh with a terrific battle.

The fifth mural depicts Governor don Juan de Onate riding up to El Morro on a beautiful white horse. Following him are his soldiers and a number of old carretas. One of his servants is unpacking a burro and putting on the chile and beans for supper. Naturally I think this fifth mural is the finest of the lot.

The sixth shows the American pioneers driving a wagon train into Gallup, and the seventh depicts Kit Carson's capture of the Navajos in Canyon de Chelly. Robert Budlong would probably think that the seventh mural is most beautiful, but if he does, he has no eye for real beauty which can be seen in the mural showing El Morro.

Is the visitor report for a month supposed to be taken from the 23rd of the preceding month? It certainly must be because if it was not there would be a week each month when there would be no record of visitors.

An old friend of yours was here the other day, Boss. Herbert V. Clotts sends his best regards.

****

CANYON DE CHELLY

By Robert R. Budlong, Custodian

June has been a most eventful month at this National Monument. Doug Harritt has arrived for summer ranger duty, the pumping machinery has been installed, the water reservoir is filled, the big tires have arrived for the car, and today we are moving into the new residence. This is entirely too much to have happen in any one month, and we are a little too dazed to fully appreciate all of it just now.

There were 209 visitors to this National Monument during the month. This is the greatest visitor travel in any month since I have been stationed here. Last June we had 179 visitors---our peak in visitor travel for 1935. Our 209 visitors this month took trips as follows: White House Trail, 5 trips (23 persons); south rim of de Chelly 21 trips (113 persons); car trips within the canyons, 19 (64 perons); horseback trips, 2 (4 persons). Total trips, 48; total time, 7140 minutes; average trip, 149 minutes. One party of people arrived on one of the hottest days, and did not attempt to drive to the rim, but spent two hours in the office, getting their views of the canyon from photographs.

Weather has turned hot. Maximum was 102 degrees on the 20th, minimum 42 degrees, on the 1st. We had but a trace of precipitation during the month. High southwest winds were frequent, and deep dry blow sand in the canyons has made car travel totally impossible for any cars but those equipped with the widest of tires.

The wide tires for the government pickup arrived during the month, and for the first time in nearly two years the custodian was able to drive into the canyons without bothering about dry sand. At last I am able to get into the canyons and find out just what this National Monument looks like. For nearly two long years I have descended the White House Trail and looked down into the canyons from the rim, hoping that some day I'd be able to drive in the canyons, and now that time has come.

Ranger Doug Harritt returned to duty June 1. It surely is fine to have him back with us again. We have mapped out a big program of projects for the year, and hope to accomplish much work this season.

"Doc" and Mrs. Gipe arrived at this National Monument in "Hohokam," their antiquated Park Service strugglebuggy, vintage of 1902, and work on the construction of the pump house and erection of pumping machinery was begun. At this writing the pump is working smoothly, the water reservoir is filled to the overflow pipe, the walls of the pump house are up about four feet, and we feel that construction worries here are a thing of the past, with "Doc" on the job. You know, Boss, he's another man who only works five days out of the week. The other two days in every week that he doesn't work (officially) he works just as hard, and if you could have been here Sunday night about 10:30 p.m. to see him enjoying his Sunday evening off duty, you'd have found him in the custodian's residence fixing leaky faucets and putting in gaskets so the custodian could move into the new residence. And you should taste the lemonade that Mrs. Gipe makes. On these hot days whenever we wander down to their tent, a glass of cool lemonade always materializes. Official trips to the tent by the custodian, the HCWP and the Ranger are in order very often.

Mr. and Mrs. H. E. Bailey arrived to spend a number of days at this Monument just as the last monthly report went in the mail. They made a large collection of the plants of this region, and we were mighty sorry to have them leave. They were the first of the Park Service specialists to visit this Monument.

Mr. J. B. Hamilton paid us several visits during the month. Mrs. Hamilton accompanied him on his last trip.

I returned from Gallup late the night of June 16 with the big tires for the government car, and was greatly pleased to find Jimmie Brewer, and Clyde and Sarah Peshlakai waiting for me. The following day we initiated the big tires, and showed Jimmie a portion of the finest Monument in the Park Service. Those folks must return and visit us again soon.

Work on the trail will commence at the completion of the pump house. Meanwhile the supplementary septic tank has been put in place, and the water reservoir mostly covered with rock. It does begin to seem as though most of our worries over the house, water and plumbing, are over.

As we go to press, Mr. Vincent W. Vandiver, Regional Geologist, arrives at the office. Tomorrow we are going to take him into the canyons in the car. We have been mighty anxious for him to visit us, for a long while, and are very pleased that he has managed to do so at this time.

****

CAPULIN MOUNTAIN

By Homer J. Farr, Custodian

This Monument has been visited by approximately 2,500 this month. Travel has been from almost every state in the Union, and it appears that ninety per cent of these have come in new automobiles. No matter how hard the drouth or depression, though they may be out of food and clothing, people will buy new cars.

The roads in general in the four directions have been fair but a little rough and plenty traveled; the roads in the monument has been slightly dressed and the rocks picked up. While being in only fair condition, I have heard no serious complaints.

The weather has been extremely hot and dry, with only a couple of small showers, and these have been strictly local; no general rains in this part of the state for June. The thermometer has been registering around 95 during the middle of the day for several days here. This is almost a record for this seven thousand foot altitude.

****

NAVAJO

By Milton Wetherill, In Charge

Under Roads and Trails 4x391 for June. Spent most of the time clearing up and rebuilding the wet weather trail to Keet Zeel, in one place which goes along a sloping cliff face I put in logs and filled over the top with rock and dirt. Several washes had to have new crossings.

On the upper part of the trail which is used all year, two washes had to have new crossing. In one place 50 feet of oaks had to be cut out in order to get through to where you could cross, in another 20 feet of oaks had to be cut.

Old Whiskers has a herd of cattle in Keet Zeel Canyon; four bulls in the bunch; one is an old white face. This old boy has the habit of scratching his back on the oaks along the trail, with each scratching one or two oaks are pushed over, generally across the trail. These have to be cut out

and removed to keep the trail open.

Mrs. Cropp and daughter with three ladies, also John Claw, Navajo interpreter for Rev. Cropp, were in June 5, 1936. The oldest of the ladi was the most interested and kept saying is this real or is it a movie stu they all remarked that it was worth the trip down.

Went down to Kayenta with S.C.S. party June 10, 1936; returned with Uncle John and Mr. and Mrs. N. Roosevelt. Lunch was served at the camp ground. While eating lunch a party of two came in which I conducted thro the ruins while Uncle John took Mr. and Mrs. Roosevelt.

Sunday June 14, 1936, Mr. V. W. Vandiver, regional geologist, Nation Park Service and Mr. L. T. Brady of the Museum of Northern Arizona came i I took them to Keet Zeel and returned to Be-ta-ta-kin, where I found a party of four. They had been through the ruins but had a short talk with them.

The western division of the R.B-M.V. Expedition is in camp at Marsh Pass. They are all putting up a camp in the main Tsegie.

At 12:30 a.m. June 15, 1936, a freak wind hit the canyon. A large number of box elders and aspens were snaped off like breaking a match. At camp the post that I had set to hold the stove pipe snapped off and partly wrecked things;outside of that, no damage done at camp.

I have three coyotes and a fox that come into camp at night to find if any food has been left where they can get at it;so far they have been out of luck.

Old Nick Wing (a Raven which has a nick in the right wing; there are three or four feathers missing) has been hanging around the head of Be-ta ta-kin Canyon with a bunch of young ravens.

By Hosteen John Wetherill, Custodian

The forerunners of the Rainbow Bridge and Monument Valley Expedition arrived on the19th. They are now scattered broadcast over the desert. Ansel Hall has not turned up yet.

Mr. George Harriman came in last evening with Jack Roache and Jack's two young daughters. They expect to visit the ruins before they leave Kayenta. I gave Milton instructions to keep track of all the questions visitors ask and what I consider more important his answers to them. I think sometimes the answers are interesting. In one case a lady from Boston or vicinity asked me what the rubbed places on the rocks in the

ruins were. When I told her they made by the ancient people sharpening their stone axes, she told me I was wrong. A certain ranger had told her that it was where they would stand and rub their sandals on the rock. I showed her some of the places where they would have trouble standing. With best wishes to you all and hoping you can carry out your wishes in the shade, I am.

****

NATURAL BRIDGES

By Zeke Johnson, Custodian

Report time is hereonce more and I am glad to say that all is well with me. The Monument is just as interesting to me now as it was 20 years ago, and more so because we are becoming more acquainted with each other. That makes it the more interesting.

I told you in last month's report that we needed rain. We still do for we have only had a few sprinkles and not enough to do much good. However, it rained enough at the monument to run down some fresh water into the tanks so I have plenty, such as it is.

Travel is just about as it was in May. It has been plenty hot and there is a good supply of those little black things they call gnats. You know those little fellows; they love to get in your ears and squeal about it. I have contacted or talked to 68 visitors, and have missed about that number as often when I am hiking with a party people come and go and I don't get to see them. Some register and some don't. However, I never have any complaints, except occasionally about the poor trails and accommodations, but most people are so interested they don't find time to mention those things. A number of professors from the University of Utah with students have been with me this month.

Deric Nusbaum hiked to the other bridges. He also visited the ruin above the Sipapu and he said he did not blame me for being enthusiastic about the monument for he could see plenty to be enthusiastic about. I am still in love with my little job and am trying to do all in my power to make it a success.

Thanks for the folders. I am sending them through the mails to many people who want to come and see the bridges. I am taking a party out today who were here three years ago. Will be with them several days.

****

HOVENWEEP

By Deric Nusbaum, Ranger

Mr. Al Lancaster, farmer at Ackman, Colorado and past assistant to Dr. Paul Martin, Mr. Joe Brew and Mr. Earl Morris on archeological field trips, accompanied the traveling ranger on a trip into Ruin Canyon. His guidance facilitated finding the major sites of the region, and his advice,

based upon past ruin restoration experience at Aztec and Mesa Verde, strongly influenced the following estimate on restoration work needed at Hovenweep and Cutthroat Castle.

Starting late the afternoon of June 18, we followed a newly improved country road due west from Ackman to the Lowrie Ruin turn-off, and then headed southwest. We camped on a trock out-crop 4.15 miles north of the Colorado-Utah line (at the point where it is traversed by the Hovenweep-Ackman road) or 4.9 miles north of Cajon Reservoir.

On the morning of June 19 we walked for about 1.25 miles southwest, --directly toward the center of the Ute Mountain range. On the south shoulder of the second ridge (about 1 mile from the road) stands a 14-foot high circular tower just to the north of a recently and thoroughly potted unit pueblo. We continued southeast across a deep draw (Cutthroat Canyon) and in a small east tributary found the excellently preserved site that Dr. Paul Martin named.

Photographs of this ruin will be sent to headquarters in the near future. I hope that they will add weight to my thought that this site should be included in Hovenweep Monument boundaries. The "Castle" is 8.95 (plus a mile and a quarter of walking) northeast of the D-shaped unit at the head of Ruin Canyon in Hovenweep. As the monument in question is spli into three separate sections (to the best of my knowledge), the inclusion of a fourth, adjacent 5-10-acre tract would not be impractical.

Cutthroat Castle is larger than any single unit of Hovenweep and the preservation is better than that of any building visited in Ruin Canyon (with the exception of some of the single towers).

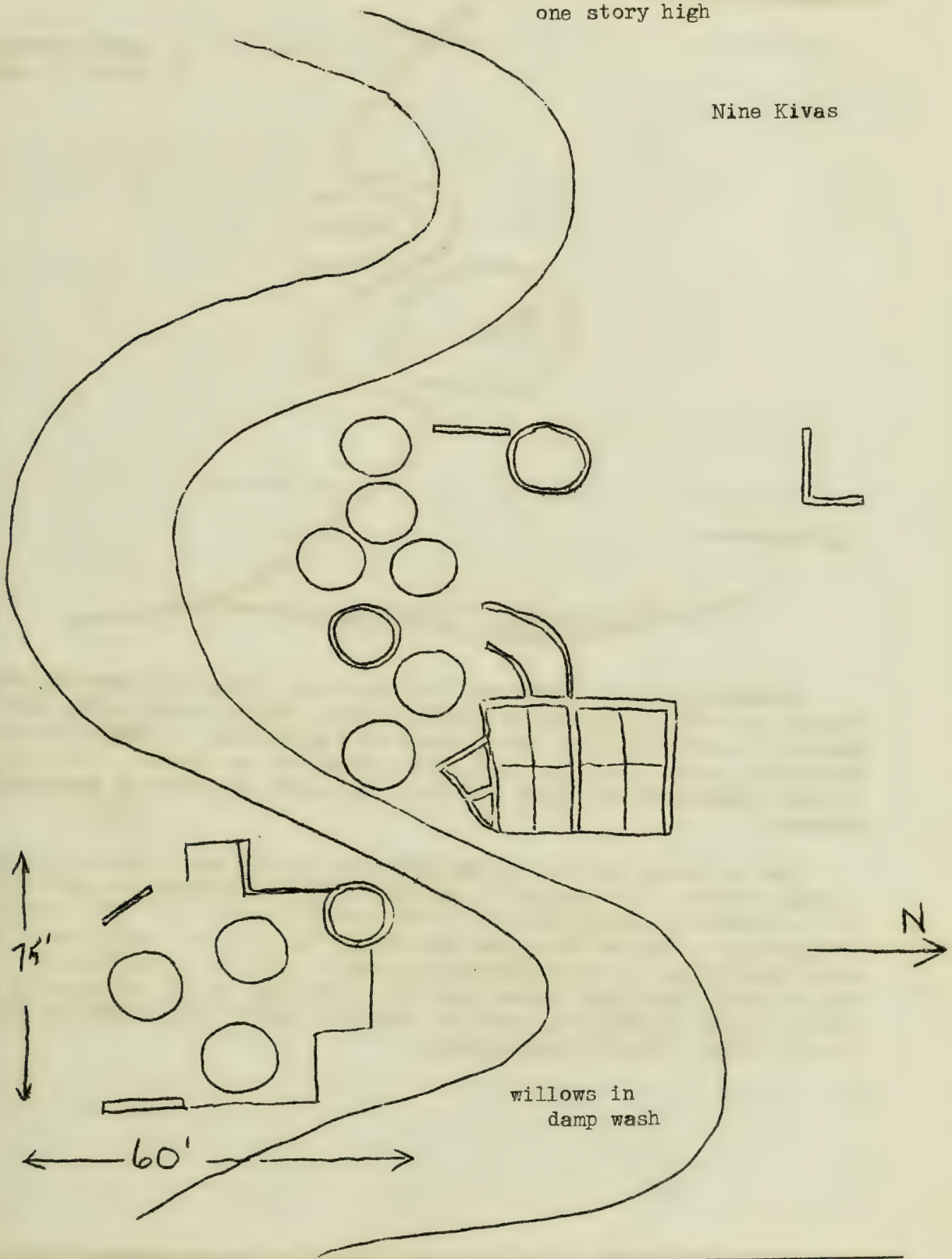
I've mentioned the visit to this ruin here in detail because it is certainly worthy of consideration as part of Hovenweep National Monument. It is on Federal land too.

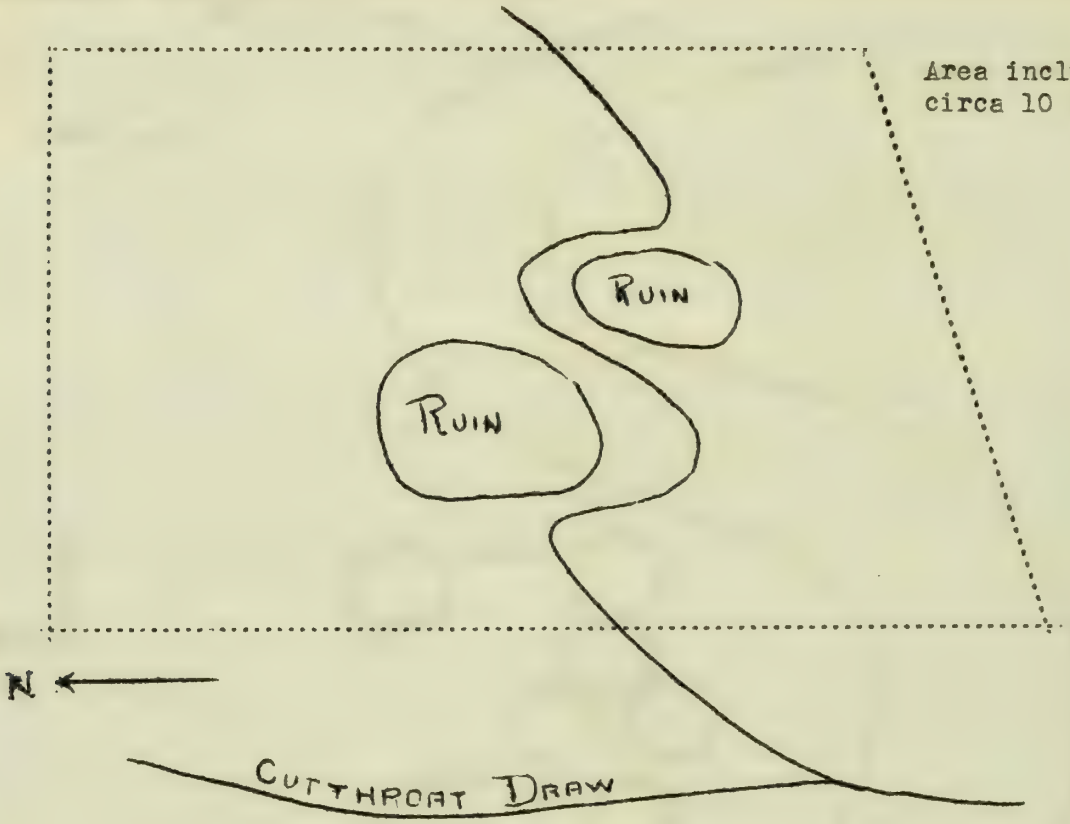
The following is a sketch map that gives some idea of the ground plan of the site. Mr. Lancaster believes that three men could strengthen the shaky walls in two weeks time if they worked in the winter when water was available in the draw below. (see following page)

This second sketch shows an area that would include the main site of Cutthroat Castle and the ground to the tops of the draw slopes as well as enough of the draw to protect the possibilities of water development that the presence of willows suggest. Unfortunately we could not find any corner markers to locate definitely the proposed area. (see page 458).

Double lines represent walls over one story high

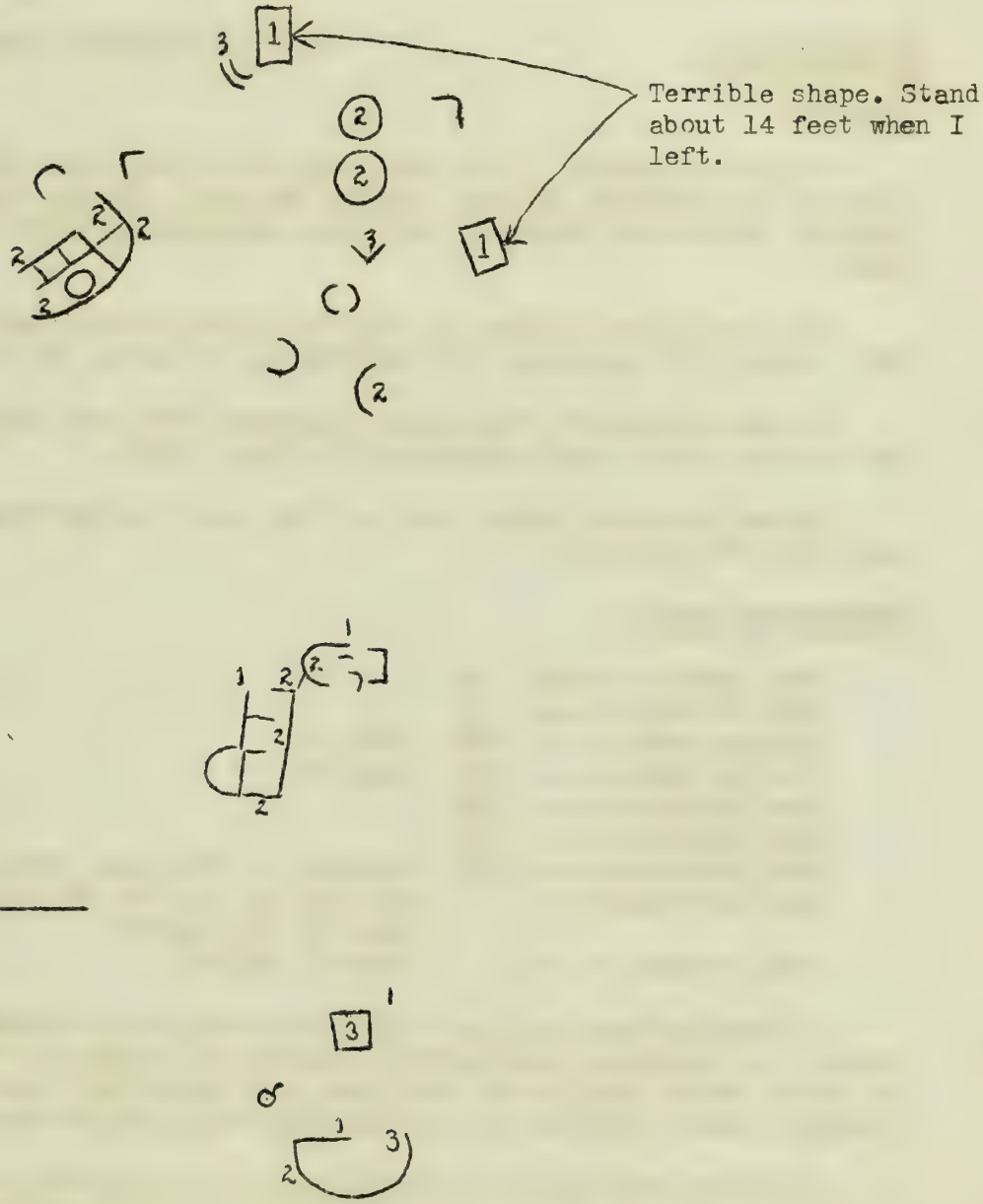
Nine Kivas





Hovenweep National Monument is pretty well protected from the casual tourist by a baffling maze of country roads. Signs would permit more people to visit the site, but I think it a good idea to forego posting them until a time when the ruins are restored to an extent. Just now half a dozen 'preventative' signs might do some good if placed at appropriate places.

The following sketch map includes most of the units around the head of Ruin Canyon. The numbers 1, 2, and 3 apply to restoration as to whether it is imperative, necessary or for adequate preservation. Mr. Lancaster stated that a crew of three men (mason and two helpers) could check the worst weathering in approximately six weeks. This work certainly is needed two big walls have gone since last fall (the time of Mr. Lancaster's last visit) and a lot more are about to tumble, - and it would take so little to save them. (See following page.)



The spring at the head of the canyon has been cleaned by stockmen and now holds about three barrels of fair (slightly alkali) water.

There are comparatively few signs of recent vandalism within the monument area. Ranger Don Watson of Mesa Verde visited the monument last spring just after two rooms had been cleaned out. People familiar with the region attribute the vandalism of recent years to the stockmen that winter their animals in the region and have lots of time to explore around.

BANDELIER

By J. W. Hendron, Ranger

Visitors:

Visitors numbered 1,810, arriving in 489 cars from 38 states, and District of Columbia, England, India, Scotland, Canada, Germany, New Zealand, Australia, Honduras, Republic of Columbia, Costa Rico, and Mexico.

The six highest states in order by visitor count were: New Mexico, 814; Texas, 127; Colorado, 89; California, 67; Ohio, 56; and Missouri, 46.

Our attendance for this month increased 977 over last month, or 117%, but did not quite equal attendance for June, 1935.

Return visitors show a total of 151, and I do not think that we have made note of them all.

Weather and Roads:

Days partly cloudy:	19	
Days cloudy-------:	1	
Maximum temp.-----:	93	June 18
Minimum temp.-----:	41	June 12
Mean Maximum------:	84	
Mean Minimum------:	54	
Precipitation-----:	.89	against .06 for June, 1935.
Rain and sleet----:		May 24, 25, 26, 27, 30, 31. June 10, 15, and 23.
Dust storms-------:		June 4, and 10.

The weather has been good with the exception of several disagreeable winds. Our heaviest precipitation record was on May 30, with a total of .60 inch, which began about 6:30 p.m. and lasted well into the night. The heaviest record for June was on the 15th and showed a total of .13 inch.

The roads were good in general until a few days ago when a heavy rain on the Ramon Vigil Grant and on the Detached Section washed several places, making it rather rough. I think our rainy season has just begun and it is most welcome. The roads have been dusty and the creek is going dry.

Visitor Trip Chart:

One hundred and sixty-eight parties were conducted through the ruins, and given short lectures, numbering 864 people. The average time per trip or party was 63.36 minutes. One hundred and forty-nine parties took complete ruins trips; nineteen were given short talks or special lectures.

Recently we have been excorting late visitors through the ruins

after supper time; as a matter of fact, it is much cooler at that time and more satisfactory for lectures. Several special lectures have been given at the camp ground in the evening or at the hotel or office. We have had our share of professional lecturers this summer, gathering their material for Travel Talk Series, and they have been very desirous of gaining information without having to go to the technical reports for it.

Special Visitors:

May 30 - Mr. and Mrs. Donovan Senter were in for a few hours with a group of young archeology students from the University of New Mexico. Mrs. Senter was Dr. Florence M. Hawley before her marriage the latter part of May. June 2--Mr. and Mrs. Millard Henning arrived at Frijoles for a several days' stay. The Hennings are visiting Southwestern Monuments, spending a few days at each place. June 3 - Mr. and Mrs. Branson De Cou were in, gathering material for their travel talks. The De Cous are famous as international lecturers, giving musical travelogs illustrated with masterpieces of art and photography. This is their seventeenth season. June 10 - T. C. Miller, Custodian of Chaco Canyon National Monument, was in the canyon for a short while, accompanied by Stanley Milford of the School of American Research in Santa Fe. Mr. Miller seemed to be very pleased with our little valley and his short trip through. I'm sorry he was not able to stay long enough to see it all. June 11 - Mr. and Mrs. C. F. Bowser of Warren, Ohio, arrived to spend several days in the canyon gathering material for a series of illustrated travel talks. They are making a tour of Southwestern Monuments. Mrs. Bowser seemed to be particularly interested in the pottery of the Rio Grande valley and wanted to include material of the same nature in her lectures. We helped her all we could by way of explanation since our collection of pottery for demonstration purposes is rather slim at the present time. Dr. James F. Zimmerman, President of the University of New Mexico, spent an hour or so in the canyon with a small party. June 12 - Chuck Richey and J. B. Hamilton were in for the day on business. June 15 - A. J. S. Eccleston, special agent, Division of Investigations, Department of the Interior, arrived for a day or so on business.

General:

Alfred Peterson, commonly known as Pete, arrived at Bandelier on June 4 to take over the duties of ranger for the summer. He received his B. A. degree from the University of Arizona a short time ago in Archeology and is now out to put it into practice for a while until he returns to school in the fall to take his Masters degree. Pete has been stationed for the last five summers at El Morro National Monument and knows the Park Service routine, and so he just stepped right in and went to work. I'm sure glad that he is out here; now we can concentrate on our visitors a little more and not have to rush them through so fast.

In view of the fact that Earl Jackson made a most comprehensive study

of questions asked by visitors, I think I have run on to a couple that he omitted. A few days ago I was walking across the little footbridge near the hotel with a party and suddenly a young lady asked me if that was one of the Indians over in the flower garden; it happened to be Mrs. Frey. At another time a lady walking along the cliffs asked if the Indians were having a pow-wow or a dance or something across the canyon on the other side of the trees. I looked up very surprised and she asked what all the whoops and cries were. It happened to be Mrs. Frey's little boy, home for the summer vacation.

I haven't heard anything from Earl lately, but from the last report he seems to be getting along very well.

****

BANDELIER FORESTRY

By James Fulton, Forester

On May 28 a total of 41 landscape-planted trees, 39 of which were Pinus ponderosa and two of which were Pinus edulis, were cut and burned because they were attacked by Ips confusus var. Five man-days and one supervisory man-day were expended on the project, making a total cost of $15 and a cost per tree of 37¢. All these trees were located near headquarters area in Frijoles Canyon.

During the first two weeks of June I have been cutting lintels for the Equipment Shed and aspen for ceilings in Quarters No. 2. In all, I cut, peeled and split enough aspen to make 9,670 lineal feet of ceiling material.

Since May 15, I have been excavating and pouring footing for the Equipment Shed.

****

HEADQUARTERS STUFF

BRANCH OF EDUCATION

By Robert H. Rose, Park Naturalist

During the month of June the Educational Staff has consisted of Junior Naturalists Dale S. King and Charlie R. Steen, Student Technician Clarence Cole and Park Naturalist R. H. Rose. King and Rose have been on headquarters work the entire month, while Steen returned to headquarters late in the month from his relief assignment at Montezuma Castle. Cole began duty at headquarters on June 4.

Headquarters and Field Personnel Changes and Additions:

Following is the status of seasonal positions in Southwestern Monuments as of June 30, 1936.

1. Jerome W. Hendron, temporary ranger, Bandelier.

2. Alfred Peterson, temporary ranger, Bandelier (not previously reported). Peterson entered on duty on June 4.

3. Doug Harritt, temporary ranger, Canyon de Chelly.

4. Ranger-Historian, Casa Grande, to remain vacant until heavy travel season during winter months.

5. Clarence Cole, student technician, headquarters (not previously reported), entered on duty June 4.

6. Jerome Hastings, ranger-historian, Chaco Canyon, to enter on duty July 1.

7. Evon Z. Vogt, Jr., acting ranger, El Morro.

8. Deric Nusbaum, traveling ranger, entered on duty early in June.

9. Zeke Johnson, Custodian, Natural Bridges, on duty May 1.

10. Milton Wetherill, ranger-historian, Navajo, to enter on duty July 1.

11. Woodrow Spires, temporary ranger, Tonto, effective July 1.

12. Paul Beaubien, temporary ranger, Walnut Canyon.

13. James W. Brewer, temporary ranger, Wupatki, effective July 1.

In order to complete the record on personnel, it is proper here to mention that Permanent Ranger Martin O. Evenstad of Tumacacori National Monument is transferring, effective late in June, to Muir Woods National Monument in the same capacity. For the time being the Tumacacori position made vacant will remain unfilled. Also, Frank L. Fish, permanent ranger, Montezuma Castle, is transferring to the position of Custodian, Chiricahua National Monument, effective July 1. Relief help is being secured at Montezuma pending filling the position made vacant by Fish's transfer. Our best wishes to these men in their new assignments.

Administration, Clerical:

During the month Park Naturalist Rose prepared copy on mimeographed leaflets for (1) Aztec Ruins; (2) Chiricahua; (3) Tonto, revised; and (4) White Sands, revised. In addition, general correspondence was handled while a total of two days was spent finishing up the geographic place names reports for Bandelier, Natural Bridges and Arches.

About 300 photographs were filed; educational contacts tabulations were brought up to date and a nine months' summary prepared; and time was given to study of plans and to correspondence relating to the proposed museum at Tumacacori.

Gifts and accessions received during the month, or not previously reported, include (1) "The Pottery of Pecos," Vol. II, by Kidder and Shepherd; (2) Rio Grande Culture Area map prepared by Field Division of Education from data by Dr. Mera of the Laboratory of Anthropology; (3) 2000 botany labels; and (4) a loan of a considerable amount of archeological material for the Chaco Canyon Museum from the Museum of New Mexico, Santa Fe. A consignment of bookcases for the Headquarters Library have been ordered and should be received within about a week. This will enable us to keep our books in much better condition than in the past.

Outside Contacts:

On Thursday afternoon, June 11, R. H. Rose gave an illustrated talk on the Kino Missions of Southern Arizona and Sonora, before the Community Church Auxiliary; attendance, 35.

Activities along other lines will be covered in the reports of Naturalists King and Steen and of Student Technician Cole, which follow:

Report of Jr. Naturalist Dale S. King

On duty at headquarters the entire month.
Ten days on May report.
Half day on Broadcast.
Compiled Southwestern Monuments Bird Banding Report for 1936.
Compiled Casa Grande Bird Banding Report for 1936.
Assembled and mailed bird banding reports from other monuments to Biological Survey.
Three hours on Natural Bridges informational folder.
Completed plans for Tree Ring exhibit, Case 4, Bandelier Museum and mailed details to Berkeley for preparation.
Wrote 23 letters.
Remainder of time on routine office work---library, incoming and outgoing educational supplies, etc.

Report of Jr. Naturalist Charlie R. Steen:

June 1 - 21 Relief at Montezuma Castle. Left Montezuma Castle on the evening of the 21st and arrived at headquarters that night.

22 - 30 At headquarters.

Report of Student Technician Clarence R. Cole, ECW:

Time spent mostly running mimeograph with various other odd jobs thrown in for good measure, guiding especially. I am thinking of changing my title from Student Technician to Mimeograph Technician or Head Hay-bailer. Some days my guiding and office work were mixed indiscriminately.

Guide Duty:

From SWM Stencil No. 16.

June 4-24, incl.

Total persons guided: 157

Total Trips Made (Ruins and Museum): 36

Office Duty:

Copied Aztec Library Index for Headquarters Master File.
Mimeographed, cut and packed 5000 White Sands informational leaflets.
Mimeographed, bound and packed 1500 copies Aztec informational leaflets.
Cut cover and map stencils for Chiricahua informational leaflets.
Mimeographed 600 copies Annual Bird-banding Totals.
Mimeographed, bound and packed 2000 copies Chiricahua informational leaflets.

CONTACTS DISCUSSION

By Robert H. Rose, Park Naturalist

Contacts tabulations for June, 1936, and for the elapsed nine months of the current travel year appear as a part of this report. The following observations (see June, 1936, Statistical Summary and the nine months tabulations) are significant:

1. Walnut Canyon with one temporary ranger reports 1,441 visitors and 1,200 educational contacts. Checking the Form 16 reports, we find 115 of these are "double contacted" - that is, were given informal talks at the ranger station as well as field trips. Deducting 115 from 1200 gives 1085 different people contacted.

2. The difference between 1441 and 1085 is 355 - the number of visitors not contacted at all at Walnut Canyon. This 355 who could not be contacted at all at Walnut exceeds the total travel of 267 at Wupatki; 335 at Tonto; 309 at Gran Quivira, 209 at Canyon de Chelly; and compares with the 362 at Pipe Spring.

3. The 1200 educational contacts at Walnut Canyon exceed the 864 at Bandelier; 209 at Canyon de Chelly; 456 at Chaco Canyon; and 826

at Tumacacori; and compare with 1,698 at Montezuma Castle.

4. The time per field trip at Walnut Canyon is 31 minutes - necessarily short since the ranger must keep fairly well within the vicinity of the Lookout in order to contact anywhere near all of the visitors to that monument.

5. The 4475 guide minutes for field trips at Walnut totaled with the 5610 minutes for the "Misc" contacts (not entered on Summary), make 10,085 guide minutes for June at Walnut - a solid 21 eight-hour days. This doesn't include the time required to gather the people into groups; time between groups, etc.

6. One must conclude that in the summer months Walnut Canyon is a very critical spot and that it is impossible for one man to deliver anything like adequate visitor service. The following three months bid fair to reveal the same condition, probably more critical. A study of the month by month tabulations through the winter months will prove beyond a doubt that Walnut Canyon badly needs a year-round custodian.

The variation of total travel for nine months in Southwestern Monuments is shown on the graph found herewith. Superimposed upon the travel graph the educational contacts have been indicated on the same scale. Note how for the summer months the contacts are approximately 50% of total travel. Consider that thousands of these contacts are "double contacts" and we have the fact standing out that there are thousands of visitors to Southwestern Monuments to whom we are yet unable to give any personal service. White Sands and Capulin Mountain travel, together more than 11,500, account for much of this difference.

Travel for these nine months is actual reported travel. There are many monuments having no personnel either the whole year, or part of the time, but which have had travel. Reported travel is 141,225 for the past nine months. Travel for May and June ran well over 20,000 for each month. If July, August and September average better than 20,000 each, the year's reported travel is going well over the 200,000 mark. The actual travel is considerably more than the reported travel. Hence we can foresee a record breaking year in travel when the final figures are tabulated at the close of June 30.

If Educational contacts exceed 10,000 per month for the next three months, which they are almost sure to do, the total educational contacts will amount to about 140,000 as a minimum for the travel year. Around 40,000 of these will be "double contacts" leaving about 100,000 individuals contacted. Thus we are beginning to see what the outcome will be for the travel year. It will be interesting to see how actual figures compare with these predictions.

STATISTICAL SUMMARY ON EDUCATIONAL CONTACTS FOR JUNE 1936

-SOUTHWESTERN NATIONAL MONUMENTS-

MONUMENTS	EMPLOYEES		GUIDED TRIPS					MUSEUM LECTURES					MUSEUM UNATT'D		LECTURES OUTSIDE		MISC.		TOTAL EDUCTN CONTACTS	TOTAL TRAVEL
	PERM	TEM	NO	ATT	TIME	AV ATT	AV TME	NO	ATT	TIME	AV ATT	AV TIME	NO	ATT	NO	ATT	NO	ATT		
ARCHES	1/165	0																	(NO REPORT)	
AZTEC	2	0	255	1180	8497	4.6	33	227	1170	4113	5.2	18.2	8	27			1	27	2,404	1,323
BANDELIER	1	2	170	864	10504	5.1	61												864	1,810
C.DECHELLY	1	1	47	204	7140	4.4	152										1	5	209	209
CAPULIN	1/165	0																	(NO REPT	2,500
CASA GNDE	2	0	291	1650	8324	5.7	28	266	1405	5421	5.3	20	46	245					3,300	1,661
CHACO CANY	1	1	44	232	6400	5.3	146	42	224	1015	5.3	25							456	643
CHIRICAHUA	0	0																	(NO REPT	851
EL MORRO	1/5	1	45	193	2847	4.3	63												193	*409
GILA CLIFF	0	0																	0	(NO REP)
GRAN QUIV.	1	0	65	309	3410	4.4	53												309	309
HOVENWEEP	0	*0																	0	(NO REP)
MONTEZUMA	2	0	180	655	5655	3.7	32	192	1043	3906	5.4	203							1,698	1,216
NATL. BR.	0	1																	(NO REPORT)	
NAVAJO	1/165	1-lab	31	95	3600	3.1	116										5	11	106	*214
PIPE SPG.	1-lab	0	28	83	680	3.0	25												83	362
RAINBOW	0	0																	0	66
SAGUARO	0	0																	0	(NO REP)
SUNSET CR.	0	0																	0	459
TONTO	0	1	46	222	2895	4.8	63	57	195	950									417	335
TUMACACORI	2	0	181	826	5982	4.6	33												826	911
WALNUT CAN.	0	1	146	520	4475	3.6	31										198	680	1,200	1,441
WHITE SNDS	1/5	0																	(NO REP)	8,852
WUPATKI	0	1	26	91	199	3.5	77										*1	179	270	267
YUCCA HSE	0	*1																	0	(NO REP)
HDQRTERS.															1	35			35	
TOTALS	11.2	10	1555	7124	22399			784	4037	1540 15405			54	272	1	35	206	902	12,370	23,338

*12 fulltime custodians & rangers;1-actg. custodian;3-temp. rangers and ran-historians; no ran.-natlsts; others on misc. assignments. *Yucca temporary ranger is "Travelling Ranger"; *El Morro and Navajo travel include some previously unreported; *Wupatki, "misc" for Arts-Crafts" Exhibition.

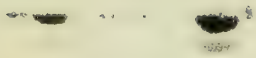
NINE MONTHS TABULATIONS SUMMARY BY MONTHS
OCTOBER 1935 - JUNE 1936 INCLUSIVE

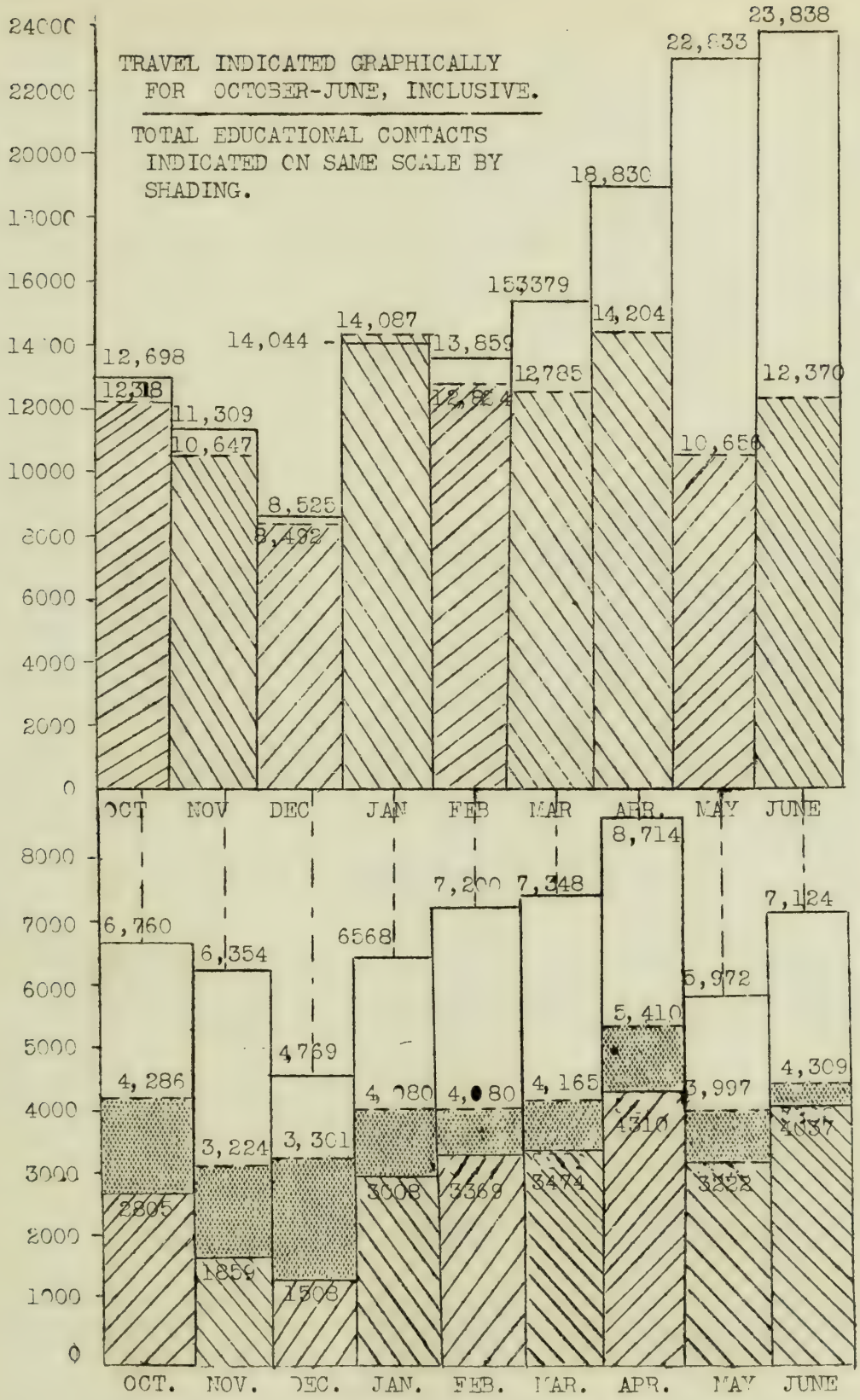
ONTHS	FIELD TRIPS		MUSEUM LECTURES		MUSEUM UNATT'D.		LECTURES OUTSIDE		MISC.		TOTAL EDUC. CONTACTS	TOTAL TRAVEL
	NO	ATT	NO	ATT	NO	ATT	NO	ATT	NO	ATT		
CTOBER	1045	6760	389	2805	175	1481	1	115	313	1157	12,318	12,698
OVEMBER	1072	6354	295	1859	171	1365	7	485	156	584	10,647	11,309
ECEMBER	926	4769	284	1508	30	1793	1	20	70	402	8,492	8,525
ANUARY	964	6568	461	3008	128	1072	20	2283	289	1156	14,087	14,044
EBRUARY	1141	7200	474	3369	81	711	11	1084	96	460	12,824	13,859
ARCH	1274	7348	535	3474	85	691	7	341	174	931	12,785	15,379
PRIL	1486	8714	642	4310	185	1100			25	79	14,204	18,830
AY	1095	5072	614	3222	139	775	5	531	27	156	10,656	22,833
UNE	1555	7124	784	4037	54	272	1	35	206	902	12,370	23,838
OTALS	10558	60809	4478	27592	1048	9260	53	4894	1054	5827	108,383	141,225

NINE MONTHS TABULATIONS SUMMARY BY MONUMENTS
OCTOBER 1935 - JUNE 1936 INCLUSIVE

ONUMENT	FIELD TRIPS		MUSEUM LECTURES		MUSEUM UNATT'D		LECTURES OUTSIDE		MISC		TOTAL EDUC. CONTACTS	TOTAL TRAVEL
	NO	ATT	NO	ATT	NO	ATT	NO	ATT	NO	ATT		
CHES											(NO REPORTS)	
TEC	965	5436	908	5415	19	51	3	600	1	27	11,529	6,265
NDEL.	531	2688							156	533	3,221	5,637
CHELI	123	483					1	350	2	9	842	541
PULIN	13	85									85	8,450
SA GR	2879	21290	1683	12826	1029	9209	1	100			43,425	23,070
ACO	284	1197	123	644					55	225	2,066	4,495
IRIC.	43	207									207	3,158
MORRO	91	457							3	9	466	676
LA CL.											0	(NO REPORT
AN QUI	200	2059	13	78							2,137	2,460
VENWERP											0	(NO REPORT
NTEZU.	892	4562	1080	5407					4	31	10,000	6,444
TL. DR	6	25					22	1750	31	233	2,008	276
VAJO	38	131							21	51	182*	214*
PE SP.	179	893					5	99			992	2,457
INBOW											0	66
GUARO	415	1478							1	200	1,678	6,000
NSET									20	61	61	1,240
NTO	617	3203	610	3014							6,217	4,957
MACAC	2002	10360									10,360	11,171
LNUT	521	1957	61	208					302	1064	3,229	4,872
TE SDS	396	3672					2*	400	738	3121	7,193	47,599
PATKI	133	577					2	150	28	263	990	1,115
CCA	2	10									10	52
ters							17	1445			1,445	
	10558	60809	4478	27592	1048	9260	53	4894	1362	5927	108,343	141,215

*Three radio broadcasts and 2-showings White Sands films during period.

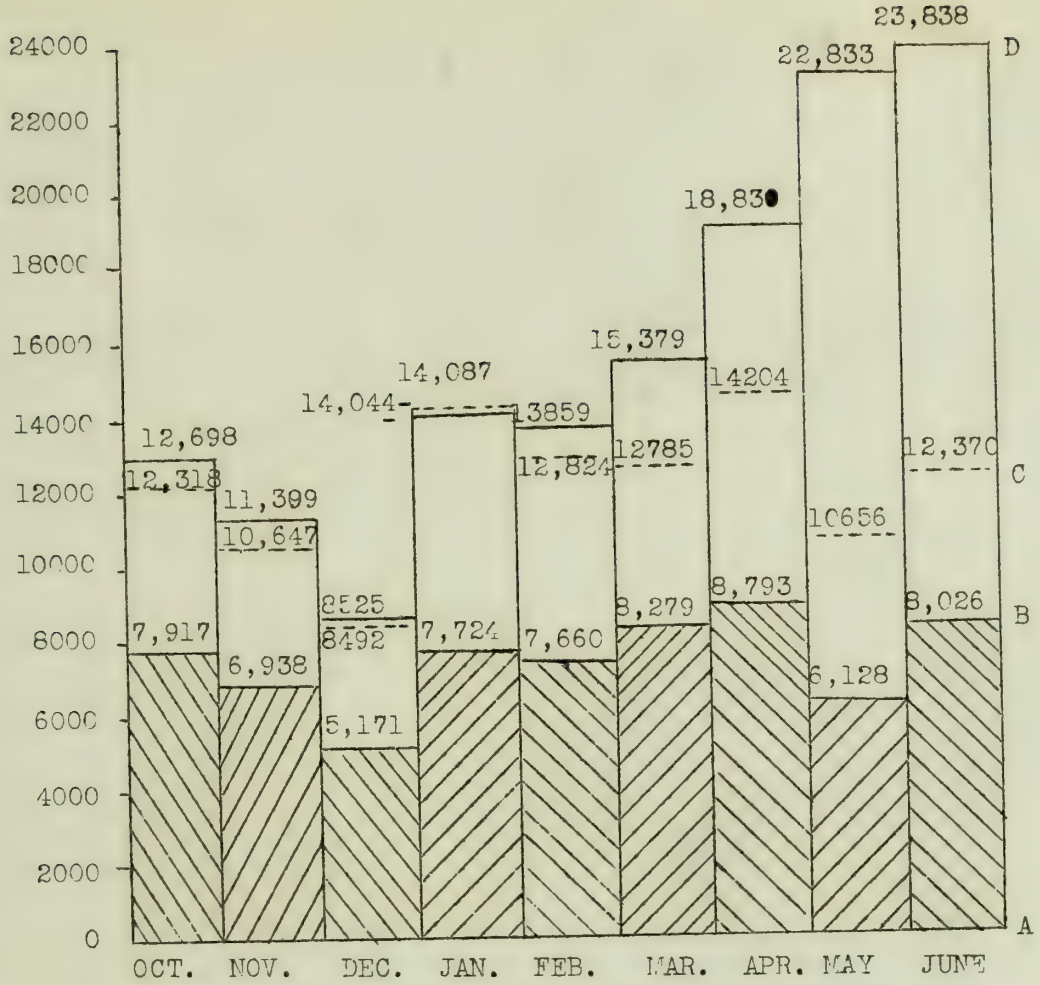




Dot shaded portions only, show unguided museum attendance.

Line shading shows attendance in guided mus. trips

Line shaded portion indicates MUSEUM LECTURE contacts; line shaded portion plus dot shaded portion indicate TOTAL MUSEUM ATTENDANCE (lectures and Unatt'd); while total of line shaded area, dot shaded and clear portions show field trip attendance.



VISITOR SERVICE GRAPH

KEY:

1. Total height of graph from base line to upper solid line represents total month-by-month travel, October 1935 - June 1936, inclusive. (Shown as height AD for June).

2. Height from base line to dotted line represents total educational contacts; that is, field, museum, misc., outside lectures and films showings. (Shown as height AC for June).
   a. Note that this total includes many "double contacts" - visitors who received both field trips and museum service. Thus, 100 people receiving both types of service are chalked up as 200 educational contacts.

3. Portions from tops of line-shading to dotted lines represent the number of people contacted a second time, that is, "double contacts". (Shown as BC for June).

4. UNSHADED PORTIONS FROM TOP OF LINE-SHADING TO UPPERMOST SOLID LINES REPRESENT VISITORS MONTH BY MONTH WHOM WERE NOT CONTACTED. (SEE LINE BD FOR JUNE). NOTE THAT ON AN AVERAGE WE ARE CONTACTING ABOUT HALF OF TOTAL NUMBER OF PEOPLE; INADEQUATE PERSONNEL, THE ANS.

THE Supplement



THE Supplement

1936 BIRD BANDING IN SOUTHWESTERN MONUMENTS

The Director
Bureau of Biological Survey
U. S. Department of Agriculture
Washington, D. C.

Dear Mr. Director:

During the fiscal year 1936 bird banding projects in cooperation with your bureau were carried on in nine of the 25 National Monuments which are administered by this office.

Stations at Navajo National Monument, Kayenta, Arizona, and Casa Grande National Monument, Coolidge, Arizona, had existed previous to July, 1935. During the summer of 1935 personnel of other monuments were informed of the program, and seven responded by obtaining federal banding permits.

Values gained from the banding of birds in National Park Service units under our charge are threefold: (1) custodians, rangers, and naturalists become increasingly familiar with the avifauna of their region, can more efficiently answer visitor questions and prepare museum exhibits; (2) the accumulating bird records at a monument will in time assume importance to visiting scientists, and the monuments thus will become valuable "scientific sub-stations;" (3) the normal work of a cooperating government bureau, the Biological Survey, is advanced, and knowledge is accumulated concerning the somewhat incompletely studied ornithology of the Southwest.

Southwestern Monuments are somewhat understaffed and Park Service work is heavy. Bird banding is carried on as a personal hobby of the individual concerned, and most work is done while the men are off duty. Consequently, only applications from keenly interested personnel were recommended by the headquarters office for approval.

It is a very conservative statement to say that far more than three-fourths of the bird banding work in the Southwestern Monuments was done while operators were off duty. Thus, the National Park Service has gained much valuable information and improved the knowledge of several of its personnel at very little actual cost.

Headquarters aided the work as much as possible by furnishing traps, literature, mimeographed forms, etc. The Field Division of Education of the National Park Service at Berkeley, California, very kindly constructed traps with the help of Emergency Conservation Work funds.

A total of 1,547 birds of 63 species were banded at the nine stations. Seventeen of the species banded by Monument stations were not represented in the Biological Survey totals of 1935, indicating that our work is being

done in an area that needs accurate study possible only by the banding method. As these more than 1,500 birds return to monument stations from year to year, it is certain that our data will become increasingly valuable.

Brief resumes of the work at each station follow:

Bandelier National Monument

Frijoles Canyon, approximately 39 miles northwest of Santa Fe, New Mexico. Transition Zone. Altitude 5,600 feet.

Operator Mrs. Earl Jackson, wife of the custodian, banded 111 birds of 12 species. Operations were not started until September, 1935, and were handicapped at various times by lack of bands, delayed arrival of traps, etc. Natural food along the constantly-flowing Rito de los Frijoles is plentiful, and birds are attracted to traps with difficulty. Mrs. Jackson's time was limited and it was not feasible to set traps during the winter in positions across the creek on the attractive sunny side of the Canyon.

Notwithstanding these hindrances, Mrs. Jackson produced a very creditable total, and her work was characterized by extreme accuracy. It may be possible in f.y. 1937 to set up a small ECW project which will place a CCC boy at the disposal of the station operator and result in a large number of banded birds.

Casa Grande National Monument

Two miles north of Coolidge, Arizona. Lower Sonoran Zone. Altitude 1420 feet.

Operator Louis Caywood and collaborators banded 854 birds of 33 species, many of which are poorly represented in Biological Survey records. Of the 854 bands, 15 were used at Walnut Canyon and 103 at Tumacacori National Monuments. The remaining 736 were banded at Casa Grande.

Thirty-three station returns were received, including 15 interesting returns of Gambel Sparrows which had been banded in March, 1935. Work was started on an intensive study of this species, and approximately 70 colored bands were placed on resident species in an initiation of long-term studies of range and distribution, life history, sex ratio, longevity, pathalogy, weight, etc.

Chaco Canyon National Monument

Work at this Monument was not begun during 1936, only two Russet-backed Thrushes being banded.

Montezuma Castle National Monument

Permission was granted to Norman Jackson, son of the custodian, to band within monument boundaries. However, due to the sparadic intervals in which Mr. Jackson was able to band, the station was dismantled and the permit rescinded.

Navajo National Monument

In Betatakin Canyon near ruin of the same name, southwest of Kayenta, Arizona. Transition Zone. Altitude approximately 6,500 feet.

Milton Wetherill, alternately Trail Foreman and Temporary Ranger at this monument, during his spare time banded 61 new birds of ten species during the 1936 season. He was not at the monument during the best banding period, the winter, and has experienced difficulty keeping traps baited due to depredations of chipmunks and squirrels.

Mr. Wetherill's tent ranger station is located in Betatakin Canyon, which with Dogozski Biko Canyon seems to afford poorer nest sites than the nearby Tsegie and Kit Sil Canyons.

Slightly increased funds have been allotted this monument for f.y. 1937, which will allow greater latitude in bird banding and other scientific work.

Pipe Spring National Monument

Four miles from small town of Moccasin, Arizona. Upper Sonoran Zone. Altitude 4,960 feet.

Operator Leonard Heaton was able to start banding in April after arrival of traps and file forms. In the two month period he made a fine showing and added 105 birds to the Southwestn Monuments total.

Heaton is proceeding very carefully with identification, and has released several individuals until positive identification was possible by means of loaned skins from various study collections.

During 1937, Pipe Spring will constitute the most northerly monument where banding is being done, and will provide an important link with Zion and Grand Canyon National Parks, Navajo, Wupatki, Walnut Canyon and other national monuments.

Tumacacori National Monument

Nineteen miles north of Nogales, Arizona, in Santa Cruz Valley. Lower Sonoran Zone. Altitude 3,250 feet.

BIRD BANDING TOTALS-FISCAL YEAR 1936-S.W. MONUMENTS

SPECIES	Bandelier	Casa Grande	Chaco Canyon	Mont. Castle	Navajo	Pipe Spring	Tumacacori	Walnut Canyon	Wupatki	Total	Banded in U.S. in 1935
1.Bluebird, Chestnut-bkd								215		215	*119
2.Cardinal, Arizona		1					8			9	*1150
3.Chat, Long-tailed						2				2	*94
4.Crossbill, Bendire								17		17	0
5.Chickadee, Mountain					1			3		4	93
6.Creeper, Rocky Mountain	2									2	0
7.Dove, Inca		4								4	1
8.Dove, Western Mourning		16		2			1			17	*1897
9.Finch, House		137					2			139	3008
10.Flicker, Red-shafted	1									1	32
11.Flycatcher, Ariz.Crested		2					1			3	*24
12.Flycatcher, Vermillion							2			2	0
13.Goldfinch, Green-backed								2		2	*111
14.Grosbeak, Black-headed								1		1	276
15.Jay, Long-crested	2									2	*49
16.Jay, Woodhouse	3				6					9	9
17.Junco, Gray-headed	56				21					77	
18.Junco, Montana					5					5	
19.Junco, oreganus					13					13	
20.Junco, Pink-sided	8									8	
21.Junco, Red-backed	10				1			43		54	
22.Junco, Shufeldt	6				8			11		25	
23.Kingbird, Arkansas							8			8	155
24.Mockingbird, Western		2					16			18	*480
25.Nuthatch, Pygmy	19							27		46	91
26.Nuthatch, Rocky Mountain	2							6		8	*447
27.Owl, Mexican Screech							1			1	0
28.Owl, Western Horned		1					2			3	*22
29.Phainopepla							4			4	5
30.Phoebe, Say		19		3			12			34	35
31.Quail, Gambel		57		10			1			68	0
32.Roadrunner		4					1			5	0

SPECIES	Ban-delier	Casa Grande	Chaco Canyon	Mont. Castle	Navajo	Pipe Spring	Tuma-cacori	Walnut Canyon	Wup-atki	Total	Banded inU.S. in1935
33. Robin, Western								7		7	*7009
34.Sapsucker, Red-naped								4			*46
35.Sapsucker, Rocky Mountain								2		2	0
36.Shrike, White-rumped		3			1		5			9	*101
37.Siskin, Pine								1		1	148
38.Solitaire, Townsend								7	53	60	1
39.Sparrow, Gambel		414				99	1			514	*4141
40.Sparrow, Lincoln		1								1	2115
41.Sparrow, Western Lark							5			5	0
42.Sparrow, Nevada Savannah						1				1	*985
43.Sparrow, Western Vesper		2								1	*300
44.Sparrow, White-crowned		7			3					10	*4141
45.Swallow, Rough-winged		6								6	37
46.Tanager, Western								1		1	56
47.Thrasher, Bendire		5					6			11	0
48.Thrasher, Crissal		9								9	0
49.Thrasher, Palmer							2			2	0
50.Thrasher, Sage									2	2	0
51.Thrush, Russet-backed			2							2	*1335
52.Titmouse, Gray								1		1	*34
53.Towhee, Canyon							10			10	121
54.Towhee, Green-tailed		2				3	5		1	11	16
55.Towhee, Spurred	1				2					3	*658
56.Verdin							1			1	0
57.Waxwing, Cedar									1	1	5423
58.Woodpecker, Cactus		1					1			2	0
59.Woodpecker, Gila		8								8	0
60.Woodpecker, Mearns								9		9	0
61.Woodpecker, Rky MtnHairy	1									1	*108
62.Wren, Baird Bewick							3			3	*72
63.Wren, Cactus		38					5			43	0
*---Group total which may include several races											
TOTAL, FISCAL YEAR 1936	111	738	2	13	61	105	103	357	57	1,547	

Operator Louis Caywood's total of 103 birds of 24 species were reported in the totals for Casa Grande, but deserve special mention because this potentially very important station will report in the future as an independent unit.

Several species have been banded that are not usually caught in the United States, and some interesting records are bound to result. Colored bands are being used for sight observations, and considerable careful work in the banding of fledglings has been accomplished with no known casualties.

Tumacacori seems to lie on a major north-south migration route, and its location in a well-watered valley with sufficient cover attracts many species.

Walnut Canyon National Monument

Ten miles east-southeast of Flagstaff, Arizona. Transition Zone. Altitude 6,700 feet.

Operator Paul Beaubien was at this monument only intermittently during 1936, and all work perforce was done on personal time. 1937 funds will keep Mr. Beaubien at the monument during the whole year, and on rangor status he can do a reasonable amount of banding during slack periods on official time.

Bands arrived too late in the fall of 1935 to catch the big migrations, but utilizing drop trap at a bird bath which has been maintained at this somewhat arid monument for some years, Beaubien and collaborators were able to band 342 birds of 17 species---some quite rare in Biological Survey records.

An additional 15 birds were banded with Casa Grande bands and are reported in the totals from that station.

Stations at Wupatki, Grand Canyon, the Museum of Northern Arizona, and Walnut Canyon cooperating on specific problems will bring some interesting data in the future, it is believed.

Wupatki National Monument

Thirty-nine miles northwest of Flagstaff, Arizona. Upper Sonoran Zone. Altitude 4,910 feet.

Pressure of other work prevented much bird banding activity by Operator James Brewer until late in the spring of f.y. 1936. A total of 57 birds of four species were banded. Indicative of possible valuable results in the future were the 53 Townsend Solitaires banded---only one of this species was banded in the United States last year.

Brewer and his wife, Mrs. Sally Brewer, are capable observers and with

their experience of working as collaborators with the Museum of Northern Arizona, will produce excellent results next year.

Respectfully submitted,

Dale S. King, Operator #5310
Junior Park Naturalist

REPORT OF BIRD BANDING ACTIVITIES FOR FISCAL YEAR 1936
CASA GRANDE NATIONAL MONUMENT
LOUIS R. CAYWOOD, OPERATOR #5128

PERSONNEL OF STATION

Receipt of bird banding permit #5128 allowed banding activities to commence March 14, 1935. Operator Louis R. Caywood, then park ranger at Casa Grande National Monument, and Dale S. King, headquarters junior park naturalist, carried on the work until the middle of July when Caywood was transferred to naturalist rating and left Casa Grande for work at other monuments.

King and Ranger Charlie Steen then cooperated in maintaining the station, Caywood resuming the work intermittently as he returned to Casa Grande between field trips.

The station fortunately enlisted the services of John E. Fast, a very valuable collaborator, who established a sub-station at Vah-Ki Inn, his winter home a half mile south of the Museum, and banded from February 3 to March 24, 1936. Mr. Fast proved a very accurate observer, and succeeded in banding more than 40 percent of the total birds banded at the station.

As various men visited headquarters, they were given instruction and practical experience which will aid them in establishing and maintaining their own stations. These included Charlie R. Steen, now traveling junior naturalist, Southwestern Monuments; John E. Fast, already mentioned; J. Donald Erskine, ranger, Casa Grande National Monument; Leonard Heaton, custodian, Pipe Spring National Monument.

March 17, 1936, Caywood went to Tumacacori National Monument, Arizona, as custodian and established a station there. Banding at Tumacacori is necessarily reported here as if it were a sub-station, although it will issue individual reports in the future.

Casa Grande work during the reminder of the year was done under the permit to King, #5310.

EQUIPMENT OF STATION

Traps: Government Sparrow, Potter (two compartment), Baldwin woodpecker,

and Michener water traps, all manufactured by the National Park Service Museum Laboratores at Berkeley, California, under E.C.W. funds.

Fast made a fine quail trap, drop traps, gathering cages, etc. A house trap was constructed by King.

Feeding and Trap Stands: To eliminate rodent damage, two pedestal feeding stations were made by King. These each accommodate a Government Sparrow Trap and a Potter Trap.

Files: As birds are banded, entries are made in pencil on a mimeographed form, prepared especially for the purpose. When a sheet of about 50 entries is filled, its contents are then transferred to the triplicate file system in India ink.

The filing system used at the Grand Canyon National Park station of Edwin McKee was adopted and found very satisfactory. Each new band issued is noted in three 5"x8" card files: (a) by Band Number; (b) by Date; and (c) by Species. Returns also are entered in all three files. Repeats, however, appear only on the individual Band Number Cards.

Two additional files are kept: (1) Key to Colored Bands; and (2) Matings and Genealogical Notes.

An observation file is also kept on which entries are made on species cards by dates. Unusual observations not necessarily connected with banding are noted down. This file supplements the others.

King kept files current, with the assistance of Fast during the months of February and March, and of Caywood on several occasions.

Other Equipment: Included usual series of Biological Survey numbered bands, celluloid bands in five colors, especially prepared banding pliers, butterfly nets for capturing roosting finches at night, flashlights, gathering cages, etc.

The Southwestern Monuments Library, rapidly accumulating a full set of reference books on western ornithology, proved of indispensable help.

TIME SPENT ON PROJECT

Due to pressure of other Park Service work, little official time can be allotted to bird banding. Operators at the monuments band rather as a personal hobby than as an official duty and try to perform as much of the work as possible during their own time. Their records, methods, etc., however, are considered government business and are subject to inspection at any time.

King spent a little more government time on the project than he desired

chiefly to insure establishment of the several new stations at the monuments on a correct and officient basis. As they run smoothly in the future, this expenditure of government time will lessen. He managed, however, to accomplish the bulk of recording in evenings on his own time.

File forms were mimeographed by King at almost no expense to the government. Operators of the station feel that the National Park Service has amassed a great amount of potentially valuable information concerning a worth while project in an extremely economical way.

STATION ACTIVITIES

(Note: The first 34 birds banded were reported too late to be included in published f.y. 1935 summaries, and will be included in this discussion. Activity started March 14, 1935, was hindered considerably by lack of bands during the summer and late fall of 1935. Banding was slowed or stopped several times by departure of operators to field.)

Number of Captures

854	bands placed on new birds of 53 species, some of which occur rarely in Biological Survey reports
33	returns
835	repeats
1,722	total captures

That the station is operating in a not-too-well-known area is shown by the following table, taken from information in "Bird Banding Notes":

Species	Banded in U.S. in 1935	Banded by Casa Grande in 1936
Arizona Cardinal	0	9
Inca Dove	1	4
Gambel Quail	0	58
Say Phoebe	35	31
Roadrunner	0	5
Rough-winged Swallow	37	5
Bendire Thrasher	0	5
Crissal Thrasher	0	8
Cactus Woodpecker	0	2
Gila Woodpecker	0	8
Cactus Wren	0	43

Approximately 70 colored bands, received relatively recently, have been used for sight observations and will bring valuable data.

Returns

A total of 33 returns were received during the period.

(A) Of these, nine were of birds probably resident, but uncaptured (one each of House Finch, Say Phoebe, and Crissal Thrasher; six Cactus Wrens).

(B) Three roosting House Finches were killed when netted at night before operators had acquired necessary skill and knowledge of technique.

(C) Six accidental deaths.

(a) Two Gambel Quail: one apparently overheated by 55 (possible maximum) minute stay in trap in early spring. Stopped trapping quail immediately and have had no further trouble. The other entered trap at dusk and was killed by cat before operator made usual rounds at dark.

(b) One Cactus Wren broke neck after entering screen porch. No fault of operator.

(c) Two Gambel Sparrows died in trap due to unknown cause. Perhaps chick feed had soured, so trap was cleaned thoroughly. Of more than 1,600 captured birds, this was the only such instance.

(d) One Gambel Sparrow killed by Shrike. Shrike was captured and released at distance.

(D) Fifteen bona fide returns of Gambel Sparrows

Of 31 Gambel Sparrows (Zonotrichia leucophrys gambelii) banded near the Museum between March 14 and April 1, 1935, the remarkably high percentage of 15 were re-captured, or "returned" during the following winter of 1935-36.

Seven of the 15 were banded as immature. All returned to the same location as adults. Of these, four never repeated after their return. Another repeated twice during the month of November. Another repeated twice during the month of December. The seventh one arrived November 16 and stayed until March 21, repeating five times.

Eight of the 15 were banded as adults. One returned February 4 not to the Museum but to Vah-Ki Inn, half mile south. Upon being released at the Museum, the bird made its way to Vah-Ki in 39 hours, repeated three times until February 23. Three were captured during less than two-week periods after their returns. One was captured during a three-week period after returning. Two stayed almost four months. One stayed three months.

No tenable conclusions can be drawn on data including only 15 returns, yet the following tendencies seem to appear.

(1) A remarkably high proportion (almost 50 percent) of the Gambels banded returned to the very same restricted locality where they had been banded. Very little tendency to wander, and when once established in another territory (cf. the Vah-Ki case) return to that locality with the

least possible delay.

(2) Gambels in their first year of maturity return to the place where they spent the winter when immature, but tend to move on to another location or other locations.

(3) Gambels in the second year (or older) of their maturity tend to return to the same territory occupied before, and remain there all winter.

Some very interesting results should emanate next winter from the trapping of the more than 400 gambels now banded.

Mr. Fast started a special study of Gambels, and hopes to continue it the next migration season. Quoting from his report in the Supplement to the Southwestern Monuments Monthly Report for February, 1935, page 126:

> ".....I thought it would be interesting to test still further their homing instinct. I began to collect birds in lots of five in small transfer cages, taking as many full lots of five as I could gather each day before noon. I then released them, five at a time, along the road to Phoenix: five the first mile, five the second mile, five the third mile, etc., up to ten miles. Newly banded birds, repeats, adults, immatures, were all the same to me except that a bird sent on this mission and again caught was excused from further service. I released them all before noon to give them the best chance possible.
>
> "The Phoenix road is toward the northwest. Authorities state that Gambel Sparrows migrate northwest and spend the summer in the territory from Montana to Oregon, and north through western Canada and as far as Alaska, so that the sparrows might be expected to say to themselves, 'Well, we thumbed a ride this far anyway." But--no--back they came...The record of birds which flew back to Vah-Ki Inn is as follows:
>
> | | |
> |---|---|
> | one mile--------five | six miles------one |
> | two miles-------one | seven miles----one |
> | three miles-----two | eight miles----none |
> | four miles------one | nine miles-----one |
> | five miles------none | ten miles------one |
>
> "It may be expected that more are back, but are too smart to enter traps again. Migration takes place in about six or eight weeks.....All of these returning birds practically have to fly over the traps at Casa Grande Museum, yet none have been taken there....."

OBJECTIVES NOW CONTEMPLATED

Gambel Sparrows

Mr. Fast plans to return to Vah-Ki Inn next winter for the entire Gambel migration period and carry on intensive work in that species. If this is not possible, operators of the Casa Grande station will do as much as they can on the project. Further and more complete study will be made of territory, longevity, mortality, and as many other problems as seem feasible and productive.

Gambel Quail

Forty-five quail have now been banded with colored bands so that individuals can be recognized at some distance. Others will be banded similarly as captured. Utilizing advice of David M. Gorsuch, authority on this species, the station is embarking on an extended investigation including problems of territory, dispersal, family groups, mating activities, longevity, population, etc.

Nine probable mating pairs have been recorded this spring and attempts will be made in the fall to capture the hundred or so quail on the monument by family groups.

Cactus Wrens

Thirteen are now banded with colored bands, and others will be so marked in the near future. Fledglings are being banded in careful fashion, and the same course of study is planned for this species as for the quail.

Colored Bands

These are also being used on other species resident for the greater part of the year, and will allow us to make more observations: Cardinals, Inco Doves, Flycatchers, Phoebes, Western Mockingbirds, Roadrunners, Shrikes, Thrashers, Woodpeckers, etc.

(Dale S. King)

TUMACACORI NATIONAL MONUMENT

Mr. Dan Clarke, a University of Arizona Agricultural student, knows the birds of this region and has been helping me band with a sub-station at Arivaca.

Banding has been more interesting here than at any other place I have banded yet because of the great variety of birds to be captured. May species, however, do not come to traps and therefore cannot be banded unless the young are caught while still in the nest. Care has been taken to band only those too young to fly from the nest when banded. In this way they grow up and the parents teach them to fly when they are ready.

If birds are banded when they are just about to leave the nest, they may fly off and become the prey of some predator. No casualties are known to occur from banding nestlings. One casualty did occur when a Canyon Towhee, unbanded, suffered from sunstroke by being in a trap in the sun for less than an hour. All traps have since been provided with shade and no similar occurrence has happened.

Banding so far south there are many new species caught which are not usually banded in the United States. By next year a sufficient number of birds will have been banded to be able to obtain some interesting records. Four cactus wrens have been banded with colored bands. As soon as more colored bands are available I will begin the banding of Cardinals with them in order to make observations.

(LOUIS R. CAYWOOD)

BANDELIER NATIONAL MONUMENT

The birds banded during this period are as follows:

Rocky Mountain Creeper	2
Pygmy Nuthatch	19
Rocky Mountain Nuthatch	2
Rocky Mountain Hairy Woodpecker	1
Red-Backed Junco	10
Pink-Sided Junco	8
Shufeldt Junco	6
Grey-Headed Junco	56
Spurred Towhee	1
Long Crested Jay	2
Woodhouse Jay	3
Red Shafted Flicker	1
Total	111

The traps used were: (1) Higgins Trap, modified to have one door, and to close with a pull string and trigger; (2) Two Government Sparrow Traps, the one on the ground proving better than the one set on a table; (3) A 2-celled Potter Trap, baited with suet, which especially attracted Nuthatches and Creepers; and (4) a Baldwin Woodpecker trap, baited with suet. This last attracted only one Woodpecker. The Nuthatches fed there regularly, but seldom spring it, and when they did, could worm out.

In the three first traps Chick Chow was used for bait, with occasional bread crumbs. Suet was used in the Potter and Baldwin traps.

(MRS. EARL JACKSON)

NAVAJO NATIONAL MONUMENT

I have listed the birds banded under two headings; one, that which has been reported to the Biological Survey; second, birds banded this

year and which have not been reported to the Biological Survey.

I miss the best banding up here which is winter as the ground feeding birds come in late in the fall and leave early in the spring. The canyon furnishes both feed and shelter. Be-ta-ta-kin Canyon is not ideal place (or so it seems) for nesting. It is good feeding ground and furnishes good shelter. The resident birds nest here, also a few of the summer birds. I have noticed more nests, also young which have left the nest, in the Tsegie and Keet Zeel Canyons, than in Be-ta-ta-kin and Dogozshi Biko Canyons.

Last year found nests of, Woodhouse Jay, Canyon Wren, Bush-tit, White-throated Swift, Mountain Chickadee and Ravin. This year Canyon Wren, Long-crested Jay and two nests started by Bewick Wren. (Note on Long-crested Jay in May, 1936, report.)

My big problem here is with chipmunks and squirrels. (try and keep feed in the traps.).

(MILTON WETHERILL)

PIPE SPRING NATIONAL MONUMENT

Attached you will find records of the birds banded at Pipe Spring National Monument during the months of April, May, and June.

I surely have had lots of fun watching the birds come for the feed and learning of their habits, as well as the new birds that come around.

The past two weeks I have not been doing anything about trapping. One reason is that the CCC boys have been bothering the traps and birds, and the other is that I have been busy at other things and could not get around as often as I should, so have brought all my traps in.

I have discovered five nests of House Finches in a clump of trees not far from the Fort.

(LEONARD HEATON)

WAINUT CANYON NATIONAL MONUMENT

During the period covered, the station was operated intermittently by four different rangers-in-charge. With a new fiscal year at hand, it appears that one man will be stationed here permanently, and that more frequent and regular observations shall be made. The past season's work has contributed little beyond the banding of birds, but more serious research is contemplated.

(PAUL BEAUBIEN)

TEXAS MISSIONS

By Ruth E. Butler, Historical Division
National Park Service

(Ed. Note: The following brief notes concerning Texas missions were gathered by the Historical Division, Washington, D. C. Incomplete as they are, we are publishing them as comparative material for the work now being done by the Park Service in the Arizona, Sonora, and New Mexico chains. As additional information is accumulated, we hope to make it available in this Supplement.)

San Francisco de los Texas (1)

This, the first permanent mission in eastern Texas, was founded by Father Massanet on June 1, 1690. It was situated somewhere in the northeastern part of Houston County, about seven miles west of the Neches River. By order of the viceroyal government, it was abandoned in October, 1693, after the mission bells had been buried.

Santisimo Nombre de Maria

Santisimo Nombre de Maria founded in October, 1690, and San Francisco de los Texas constituted the early outposts of Spanish influence in Texas, and were intended as a threat to French intervention in that region. The Santisimo Nombre de Maria was abandoned by decree of the government in 1693, because immediate danger of French encroachment ceased and because the Spanish officials were of the opinion that the Gulf region offered little inducement for colonization to the foreign nation.

San Francisco de los Neches (2)

This mission was founded in 1716 among the Neches about five miles southwest of Alto in Cherokee County. It was transferred to San Antonio in 1730.

Purisima Concepcion

The exact site of the Purisima Concepcion is unknown, but it was probably between the Trinity and Sabine rivers. Founded on July 7, 1717, it had only a short independent existence, for it was transferred to San Antonio in 1730.

San Jose de los Nazones

Founded in 1716, this mission was transferred to San Antonio in 1730, and its name was changed to San Juan Capistrano.

Nuestra Senora de Guadalupe (3)

Nuestra senora de Guadalupe formerly stood in the center of the present

town of Nacogdoches. It was established in 1716. Owing to the invasion of the French in 1719, the mission was closed for a short period, but in 1721 it was re-established in the same spot. Because of the hostility of neighboring Indian tribes, it was abandoned in 1733.

Nuestra Senora de los Dolores (4)

This mission was erected in 1717 by Fray Margil on the site of the present town of St. Augustine, in San Augustine County. It was temporarily closed in 1719 at the time of the French incusion but was later restored.

San Antonio de Valero (5)

San Antonio de Valero was founded in 1718 by Father Olivares and named in honor of the Marques de Valero, Viceroy of Mexico. It is famous today as the Alamo, site of the massacre of 1836 at the hands of Santa Anna. In 1719 the mission became a refuge for missionaries in eastern Texas when they were threatened by the French in Louisiana, and Father Margil and others remained there as refugees until 1721, when they were relieved by an expeditionary force sent by the government. Father Santa Ana, President of the Queretaran missions in Texas, used San Antonio as his headquarters from 1731 to 1734. Between 1731 and 1745 this mission served more than forty neighboring tribes and exercised great influence among the natives. About 1762 a church of quarried stone was built and a two-story convent fifty by fifty varas with two patios and arched cloisters served as an abode for the Queretarans. The pueblo which San Antonio served consistod of seven rows of stone houses with doors, windows and arched porticoes. A stream of water, bordered by willows and fruit trees, flowed through the patio. Weaving, agriculture and animal husbandry were taught in the mission school, and its personnel numbered many able and distinguished priests. About 1750 Father Francisco Mariano de los Dolores y Viana, who succeeded Father Santa Ana as President of the Queretaran missions, made San Antonio his headquarters. Several of the padres distinguished themselves in a literary way. In its spiritual influence among the natives, San Antonio had no rival.

San Jose de Aguaya (6)

The Franciscan mission known as San Jose de Aguaya was located in San Antonio, about four miles below the San Antonio de Valero Mission. Begun in 1720, and built of stone, it commonly acclaimed as one of the leading missions of its time. The architecture and sculptoring are unusually fine and are among the best examples of mission art in America.

Hallenbeck's succinct and revealing description is as follows: "This, the finest of the Texas missions and, until it began falling to ruin, one of the three finest in America, was begun in 1720 and finished in 1731. Its beautifully carved facade and baptistery windows, by the Spanish artist Huisar, are studied by artists from all parts of the civilized world. In

1868 a part of the north wall of the church fell in, and during midnight Mass on Christmas Eve, 1874, the beautifully colored dome, which the Indians called 'Day Star of their Manitou', collapsed. The structure has otherwise been greatly damaged by vandals and treasure hunters, and several of the statues on the facade have been maliciously broken."

The mission originally had a patio containing eight acres, surrounded by a high stone wall, with fortified towers at the corners. The original bells are undisturbed, as well as some paintings which were sent from Spain, but the murals have almost disappeared, and Huisar's sculptoring has been badly damaged by the elements and by vandals. The building is otherwise in a bad condition, in fact on the verge of collapse.

Architecturally, San Jose is important as the embodiment of Moorish features in mission design. Huisar is said to have been a descendant of the architect of the Alhambra, and many curious legends have been circulated concerning him.

San Xavier de Naxera (7)

San Xavier was founded in 1722 by the Marques de Aguayo on the outskirts of San Antonio, where the mission of Concepcion now stands. It was not very successful and in 1726 it was merged with San Antonio de Valero.

Espiritu Santo (8)

This mission, established in 1722, was first placed on the site of Fort St. Louis founded by La Salle. Owing to the barbarous nature of the Indians it served, it was transferred from time to time to other localities. Its ruins can be seen today near the present city of Victoria in Texas.

Purisima Concepcion at San Antonio (9)

This was one of the churches transferred to San Antonio in 1731. By 1745 a stone church was about half completed; an adobe building was being used temporarily for religious services. The stone church was completed and in use by 1762. It had vaulted ceiling, dome, and bells and contained a sacristy and a chapel. The neophytes lived in pueblo of two rows of houses, partly of stone and partly of thatch. The convento was a two-story stone building. A stone granary and stone house for the soldiers completed the unit. The workshop at the mission contained three looms and wool and cotton cloth were woven.

San Francisco de la Espada (1731) (10)

This mission was transferred to San Antonio in 1731. The neophytes, numbering 137, absconded in a body in 1737, but by 1745 work at the

mission had become stabilized, a stone church was in progress of erection, and a stone convento having two cells above and two offices below, had been built. This was later enlarged. There was a stone granary and a pueblo consisting of three rows of stone houses for the neophytes.

San Juan Capistrano (11)

This mission was established at San Antonio in 1730. The stone building erected later has been extensively repaired, but retains its original form. Its storerooms, living rooms, dormitories, offices, shops, schoolrooms, kitchens and refectories have been identified. By 1762 two hundred and three Indians lived at the mission and its workshop and farms were the scene of great activity. Only San Francisco excelled San Juan in the raising of stock.

San Francisco Xavier (1746)

San Ildefonso

San Ildefonso, located in central Texas, was erected between 1748 and 1749, under the supervision of Father Santa Ana.

Candelaria

This mission was founded by Santa Ana on the San Gabriel River in 1749. It was abandoned in 1755 owing to friction between the soldiery and the Franciscans and after the murder of Father Ganzabal.

Nuestra Senora del Rosario

The foundation of this church was begun in November, 1754. The original wooden church was later replaced by a stone structure. The mission had little success, however, only twenty-one souls having been converted after four years.

San Marcos (1755)

This mission was founded on the San Marcos River in August, 1755, but was apparently of little importance.

Nuestra Senora de la Luz (12)

Established in 1756 on the Trinity River, near the north line of Chambers County, this mission was intended as a barrier to further encroachments by the French. Storm, flood, mutiny and disease combined to weaken its usefulness, and in 1771 it was abandoned.


+ Amarillo
OKLAHOMA
ARK.
+ Lubbock
NEW MEXICO
Dallos
+ +
Ft. Worth
2 3
1
4
LA.
+ El Paso
T E X A S
13
+ Austin
12
5,6,7
Houston +
San Antonio
9,10,11
8
14
CHIHUAHUA
COAHUILA
NUEVO
Monterey + LEON
Brownsville

Nuestra Senora de Guadalupe

This mission was established in 1757 on the Guadalupe River, but was abandoned the following year due to the fact that it lacked a garrison sufficient to protect it against marauding Indians.

Mission Santa Cruz de San Saba (13)

Santa Cruz was located on the San Saba River, near Menardville, Texas. It was founded in 1757 and dedicated particularly to the salvation of the fierce Apache Indians. Its career was short, however, for on March 16, 1758, it was attacked by the Comanches, two of its priests were killed, and the mission practically destroyed.

Mission San Lorenzo

Situated on the east side of the Rio de Las Nueces, this mission was founded in 1762 at the request of the Lipan Indians who were then apprehensive of the Comanches. The mission had a fruitless existence for it exerted but little influence upon the savages. It was abandoned about 1769.

Nuestra Senora del Refugio

This was the last mission founded by the Franciscan Fathers in Texas. It was erected in 1793 near the junction of the San Antonio and Guadalupe Rivers. The site was ill adapted to the purposes of the Fathers and was abandoned on January 10, 1795. The mission was reestablished some thirty miles south of the garrison of Espiritu Santo and its name survives in the modern town of Refugio. Its ruins can be seen today at the Copano Bay.

****

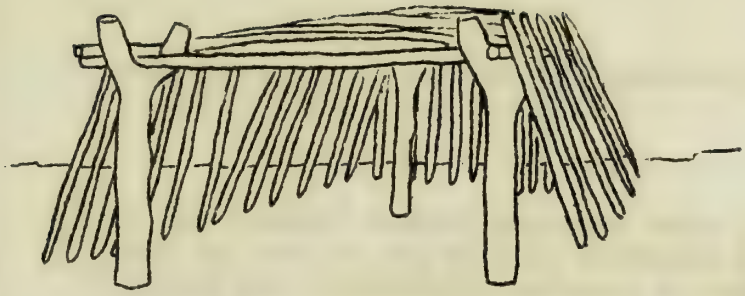
NOTES ON HOW TO BUILD A HOGAN

By James Brewer, Jr.

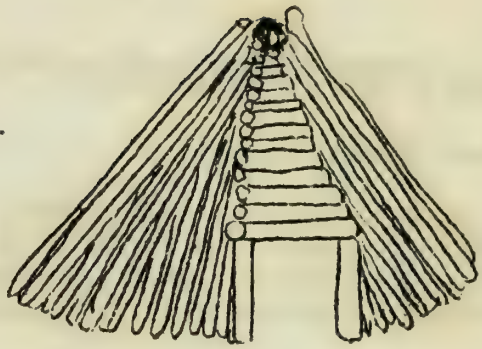
I advance the following information, not because you may want to build a hogan, but because when you get into a good one and are thankful for the warmth or for the shade you might sit down and wonder just how it is put together.

The first thing you must do is select a large forest with many different sized trees. Three forked ones are necessary for the main supports (assuming you are going to build a hogan of the old type ((Coolidge, "The Navaho Indian," page 79))); two long ones for the door structure; and many others of all sizes for filling in.

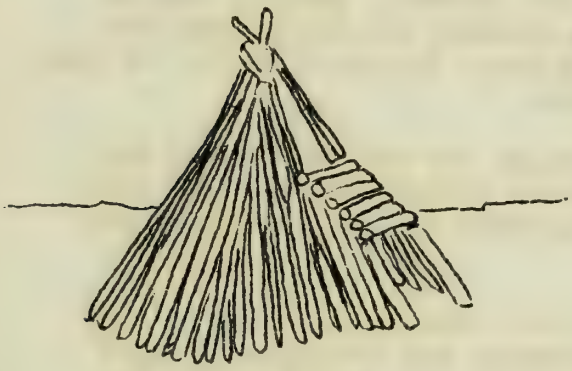
Next cut and trim what looks like enough trees to build four big hogans or one Union Depot; then cut about the same amount again; you now



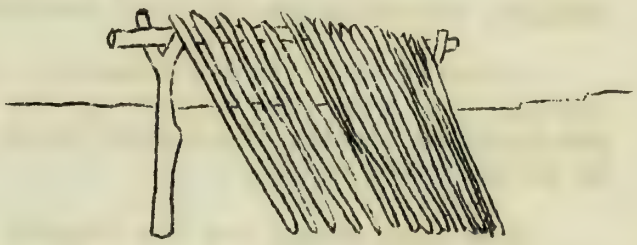
"Square-cornered"



"Sweat"



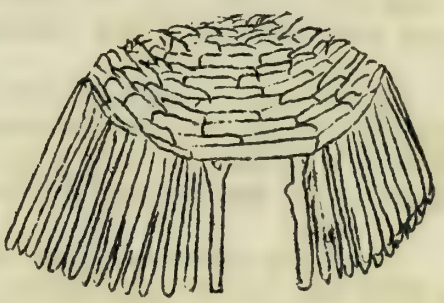
"Forked-together"



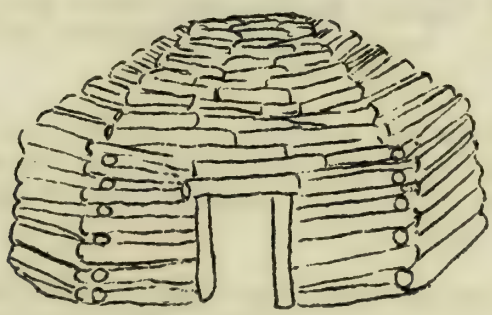
"Two-legged"



"Logs-stacked-up"



"Yeibitchai or medicine"



Modern

have enough to start.

Haul the logs to the site, after they are skinned (peeled) and carefully trimmed. The trimming is important because how can you get them close together if there are stubs of branches protruding, And what will hold the mud covering if they are not close together,

Next assemble all the Indians who want to work. After a careful count you will find you are alone. Then assemble all the Indians who in spite of not wanting to work will help you. You now have four or five Indians, depending on the local population.

Assuming that all the necessary logs are now on the site and that the bark has been left to mess up the forest rather than the camp site, you begin by letting the Navajos have the reins so that your hogan will be an authentic model.

They will select the two longest of the three forked logs and lay them on the ground with the forks interlocking and the point of the V thus formed toward the east. Then three ropes will be put around the locked forks; one is held from the east, steadying the poles as the other two are pulled westward rising the poles to an inverted V. When the poles are vertical, all the remaining men must be on hand to raise the third forked log from the west; as the forked end reaches the height of the first two logs the man on the east rope eases the tension and the first logs fall into the crotch of the third log.

This is an opportune time to have an exhibitionist in the party because the ropes must be removed. Lacking one, a man standing on his horse's back can reach the nooses and, by being careful and having led a good life, can accomplish the end without mishap.

Then the remaining logs will be laid against this tripod. This can be made fun (on a large scale) by simply pretending the tripod is a Christmas tree and the logs are ornaments. This is a simple operation requiring only that you get the logs close together and that they form a circle on the ground (except at the east where the two long ones--remember,--are placed). These eventually support the west end of the vestibule roof.

You now turn back to get another log and notice that they have all gone onto the Christmas tree. By stepping into the embroyo hogan you will quickly notice that you could swing a cat through it without much trying.

So, back to the forest; and this time we must get plenty---let's say enough for a good size Boy Scout bridge. Skin them and trim them and put them into the gaps you won't have any trouble finding. Now when you stand back you will not notice any great open spaces. Then step through the door

space--ho yes, funny I didn't tell you to bring some short stout ones for the door. Well, back to the forest and a door frame.

The door frame is made of three logs; two are placed vertically where the long door logs meet the ground and should be about five feet high. The third is laid horizontally across these two. This frame is very unsteady until the vertibule roof is added; this is done by placed two supporting poles almost horizontally from notches in the long door logs to the top of the door frame. At right angles to the supporting poles, and where they join the long door logs, you must place a short runner, just long enough to span the width of the smoke hole (the area above the notches on the long poles becomes a self-made smoke hole; you don't have to worry about it--just follow the directions and it will be there). This span with the horizontal door top holds the roof of the vestibule; simply lay logs east and west until covered; do the same for the sides of the vestibule.

Then stepping into the hogan you will notice that someone has rung in a few more or less decayed logs because they are easier to skin if the cambium is dried; so, not being Mohammed, you go to the mountain.

Now the foundation is laid and you must find an area of good adobe or clay; since the floor of the hogan must be lowered about 10 or 12 inches it is it is advisable to use this first.

I guess I should have told you to pick a site for the hogan near water, because the adobe must be mixed with water or it will filter through the cracks. Even after mixing it with water you will find cracks on top of which the mud will not stay; these places require further chinking. After all the mud is applied the hogan is very damp and quite uncomfortable. This condition prevails for several days. And it is just as well, because you should wet the floor so thoroughly that you can't use the hogan yet anyhow. Next haul several loads of good clean white river sand and partly fill the floor depressions. If the wetting has caked the top soil the sand will not get mixed into it and will stay clean.

There, now you know how to build a hogan and I'm glad it's written so that we will have a permanent record of how to do it. This is important ethnologically because the art is rapidly disappearing. The last Navajo camp I was in sported enough canvas to sail a grain boat through the doldrums.

****

FIRST SHOW BY NAVAJOS A SUCCESS

(Reprint from "Coconino Sun," Flagstaff, Arizona.)

Many from here and other Arizona towns visited the Wupatki National

Monument. Saturday and Sunday, taking in the Navajo Indian arts and crafts exhibit and came away enthusiastic about it. Two hundred Indians and 190 whites saw the show.

Custodian and Mrs. Jimmie Brewer made a success of the affair, which probably will become an annual event.

There were 38 exhibitors of 110 articles, 21 of whom received prizes or sold their exhibits. Three had exhibits not for sale. Only seven exhibitors failed to receive money.

Exhibits sold numbered 39, the total of purchases and prizes amounting to around $240 in cash. The prize money was paid by the Museum of Northern Arizona at Flagstaff. Mrs. Harold S. Colton, curator arts and crafts at the museum, and Peshlakai Etsedi, Navajo, were the judges.

The cash prizes ranged from $1 to $5 for firsts; in each class, half as much for seconds. Ribbons also were awarded for firsts, seconds and honorable mentions.

Winners of first and second prices and hororable mention, in the order named:

Plain weaving--Ada Cody, Gladys, Sarah.
Vegetal dye--Peter's mother, Amy, Bill Williams' wife.
Twilled weave--Sarah, Peter's mother, Gladys.
Traditional types--Harry's mother, Martha's mother.
Tapestry weave (belt)--Irene.
Old silver--Heshlakai.
Children's work--Peter (Spanish saddle), Virgil (chaps), Ruby (doll).
Bags--Ruby, Martha's mother

The Navajos had built one of their typical "sweat houses"--their nearest approximation to our steam baths. The building, a regular hogan, framed with forked sticks, covered with mud, floored with cedar bark and the door blanketed. Hot stones furnished heat. The fire by which they were heated was made in one and a half minutes with fire-making sticks.

The Indians stayed up all of Saturday night, visiting and singing.

The exhibits were in four shods especially built by the Navajos.

Featuring the exhibit were native craftsmen at work.

The Indians attending were much pleased with the success of the exhibit and want to hold another next year. At a meeting of the tribesmen Sunday morning, several of the older bucks adjured the others to do better work, as in the old days--to card their wool better and be painstaking in selection of materials and weaving.

INDEX TO REPORT ON WALNUT CANYON NATIONAL MONUMENT

INTRODUCTION ---------- PAGE 492

LOCATION ---------- PAGE 492

ARCHEOLOGY ---------- PAGE 492

GEOLOGY ---------- PAGE 493

COCONINO SANDSTONE ---------- PAGE 494

KAIBAB LIMESTONE ---------- PAGE 495

STRUCTURE ---------- PAGE 496

SUMMARY ---------- PAGE 497

INFORMATIONAL SIGNS ---------- PAGE 497

BIBLIOGRAPHY ---------- PAGE 498

WALNUT CANYON GEOLOGICAL REPORT

By Vincent W. Vandiver, Regional Geologist

INTRODUCTION

Walnut Canyon National Monument was reserved by the Government with the idea of the preservation of the numerous cliff dwellings which occur in this area. The geological features of the area are most interesting, however, and for those who will take the time to consider the various processes which contributed to the formation of this canyon, they will find that in miniature much the same factors are involved as those which resulted in the formation of the Grand Canyon of the Colorado River. I shall endeavor to relate in this report how these geological processes have played such an important part in the carving of the landscape in Walnut Canyon which resulted in an ideal location for the establishment of the homes of the Pueblo cliff-dwellers.

LOCATION

Walnut Canyon National Monument is located about 10 miles southeast of Flagstaff, Arizona, on a loop road connecting with U. S. Highway 66. The presence of walnut trees along the floor of the canyon has supplied its name. The reserve was created as a National Monument in 1915 although it is understood that the area was under the supervision of the Forest Service from 1906. It contains an area of 960 acres. There are of course many ruins in the Southwest of ancient pueblo peoples however there are relatively few cliff dwellings of this type. They are most accessible to large numbers of tourists due to the proximity to one of the main routes of transcontinental travel through this region.

ARCHEOLOGY

Dr. Harold S. Colton (1), of the Museum of Northern Arizona, states that the cliff dwellings in Walnut Canyon have been dated by the tree ring method indicating that they were occupied by pueblo Indians from around 900 to 1300 A.D. There may be some significance to the fact that these dwellings were being occupied shortly after the last eruption of Sunset Crater, situated some twelve miles to north, and whose last activity has also been estimated by the tree ring method as having taken place around 875 A. D. There are present ruins of some 300 rooms scattered along both sides of Walnut Canyon and it is easy to conceive of upwards to 1000 people living in this settlement. The area was visited by James Stevenson of the Smithsonian Institution in 1883 and he made the following statement: "The doors are large and extend from the ground up to a sufficient height to admit a man without stooping. The rooms are large and the walls are two to four feet thick. The fireplaces are in one corner of the room on an

elevated rock, and the smoke can only escape through the door. The masonry compares favorably with the construction of the best villages in Canyon de Chelly. Many objects of interest were found in the debris around and in these houses. Matting, sandals, spindle whorls, and stone implements of various kinds abound." During the interval from the time of Mr. Stevenson's visit and the taking over the area by the Forest Service there was much vandalism. Practically all of the objects left by the pueblos were removed and in searching for these materials many of the cliff dwellings were broken down and more or less destroyed. As the result of this vandalism it is doubtful if the detailed story of the peoples of Walnut Canyon will ever be known.

Dr. Colton considers that the people who built these cliff dwellings were probably the ancestors of those who constructed Elden Pueblo and many other sites near Flagstaff. This supposition is arrived at from the similarity of the potsherds and flattened skulls which have been recovered from the various ruins.

The dwellings in Walnut Canyon were constructed under overhanging ledges of limestone two hundred feet or more above the stream bed. Not only were their homes built along the recesses in the side of the canyon wall but retreats were also made on at least five "islands" of promontories in the canyon which served as fortresses as a means of protection against invaders. A trail is in evidence to the right of the present entrance trail to the monument which is believed to have been the route taken to obtain water from the stream or pools in the canyon. Little water now reaches the stream channel to fill the pools due to the recent construction of the Lake Mary dam. During dry periods it is also conceived that water may have been obtained by digging pits in the sand along the floor of the canyon. The remains of broken stone hoes, etc., have been discovered along the flats of the rim areas, northeast of the village, and it is here that the pueblos probably cultivated their meager crops. Another factor which no doubt influenced these peoples to select Walnut Canyon as a desirable place to live is the presence of ledges and recesses especially in the walls along the north side of the canyon which formed a means of protection against the climatic conditions of the severe winters. The presence of water supply nearby and satisfactory soil for cultivation along the rim as well as the "islands" in the canyon which were used as forts were likewise desirable features.

GEOLOGY

The oldest rocks of the general vicinity of Walnut Canyon belong to the Redwall limestone formation of the Mississippian, along the northeast flanks of Elden Mountain, where uplifted portions of the sedimentary section are exposed by this great laccolith. Above the Redwall is the river flood plain deposit, consisting of sandstones and shales, and containing tracks of land animals and impressions of fern-like plants, which has been termed the Supai formation of Permian age. Next above the Supai is the

cross-bedded Coconino sandstone and followed in order by the Kaibab limestone, both of Permian age. It is the two latter formations with which we are most concerned since they make up the sedimentary section of rocks exposed in Walnut Canyon.

Briefly the geologic history of the area may be described by stating that following the deposition of the Kaibab limestone the sea retreated as the region uplifted slightly with the sedimentary rock remaining practically horizontal apparently subjecting the formation to erosion long enough to produce a youthful topography. Upon this surface was deposited the shales and sandstones of the Moenkopi. A great thickness of varicolored shales and sandstones were then deposited in a large basin by rivers and shallow water lakes. These continental deposits make up the Chinle formation. They contain a land fauna and the remarkable deposits of silicified wood at the Petrified Forest. They supply most of the beautiful coloring to the Painted Desert area and are classed as the uppermost Triassic formation in this region. While these beds form the last record of sedimentation in this territory it is known from a study of the stratigraphy of the surrounding country that great thicknesses of Jurassic, Cretaceous and perhaps Eocene rocks were once present but have all now been removed by erosion.

COCONINO SANDSTONE

Below the Kaibab limestone which forms the rim rock at Walnut Canyon, there is the light colored, highly cross bedded sandstone, which has been designated as the Coconino sandstone from its type locallity at the Grand Canyon. The contact between the two formations is readily observed along the canyon walls. Located between formations of Permian age, as determined by fossil remains, the Coconino is likewise referred to the Permian Epoch. A closer determination of the age of the Coconino is made as Middle Permian in view of the grading contact with the underlying Hermit shale in the Grand Canyon, whose age has been found to be upper Lower Permian from the fossil flora secured.

The Coconino sandstone occupies a large area in northern Arizona, north of the southern limits of the Colorado Plateau. While much of this region is capped by the Kaibab limestone, the presence of the Coconino is certain from the many exposures in the canyon walls throughout the province. From a thickness of 1000 feet at Pine the formation thins out to zero along the Utah boundary. It also thins in a northwest direction towards the Nevada boundary where it is only a few feet thick whereas there is over 600 feet of section in the vicinity of Holbrook. From samples taken by Mr. Edwin McKee (2) the sand grains are predominantly medium coarse grained along the southern limits of the formation and grade into much finer materials to the north. The source of the material is therefore concluded to be from the south, in a barrier believed to have existed during most of earlier Paleozoic time, which extended through central Arizona and is known as Mazatzal land. Geologists generally consider that there is

sufficient evidence to conclude that the sand grains comprising the Coconino formation were in the main transported by the winds and deposited in the form of sand dunes. The lack of pebbles seems to point towards the wind as the major agent of transportation. The wedge-shaped cross bedded units of this formation are inclined in many directions, a feature not widely produced by the action of water. The only definite fossils thus far discovered in these sandstones are the footprints of amphibians or reptiles and trails made by annelid worms. The fossil evidence available also tends to support the theory of eolian origin of the formation.

The Coconino has supplied its portion of the natural features necessary in the making of Walnut Canyon an ideal site for the cliff dweller. In the valley south of Elden Mountain there are some large sink holes, known as the Bottomless Pits. They form the entrance to caves in the Kaibab limestone, which have been dissolved out by the action of ground waters on the limestone, as they flowed underground along joints and fissures to outlets in the lower levels of Walnut Canyon. The more or less porous Coconino sandstone was favorable to the seepage of this additional water into the canyon. The normal weathering of the Coconino caused much sand to be deposited in the canyon. This condition may in some instances have caused the formation of pools of water just beneath the surface and permitted the pueblo Indians to dig for water during periods of dryness. Then, too, as the canyon was being carved the Coconino was susceptible to certain straightening of the channel and during this process the old meanders of the stream were abandoned and "cut-offs" were formed. These "islands" permitted the Indians to build homes in fortress fashion in the central portions of the canyon and gave them an excellent means of protection.

KAIBAB LIMESTONE

Overlying the Coconino Sandstone throughout large sections of northern Arizona, except in the east near Holbrook, is the Kaibab limestone. It forms the upper portions of the walls of Walnut Canyon and Grand Canyon as well and caps most of the high plateau of the north-central part of the state. It is composed of grey, sandy limestone, with many horizons filled with chert, also massive layers of limestone interspersed with less resistant beds of shaly sandstone. The lithology of the Kaibab limestone with the constant variation of hard and soft members, the soft weathering away leaving the more competent beds to form overhanging ledges, has resulted in a natural habitat for the cliff dweller in this canyon.

The Kaibab limestone is quite variable in thickness, ranging from upwards to 1000 feet in the Virgin River valley to 600 feet on the Rim of Grand Canyon, and from 300 feet in the vicinity of Flagstaff to zero just east of Holbrook. Mr. Edwin McKee, Park Naturalist at Grand Canyon National Park, has developed some new and interesting details concerning this formation and the resultsof his study will be published in the near future. At Walnut Canyon the Kaibab is quite fossiliferous. Many marine fossils of brachiopods such as Productus and Spirifers may be observed. In some in-

stances the silica nodules and concretions enclose fossils sponges. The various types of fossils collected of which there are some 80 species indicate that the limestone is of shallow water marine origin. Since the limestone was deposited below sea level and now has an elevation of approximately 7,000 feet above sea level there is every reason to believe that the region has been uplifted on a large scale. It will be noted along the walls of the canyon that the contact of the limestone with the underlying Coconino is practically horizontal and it is therefore assumed that the Kaibab sea advanced rapidly at the close of Coconino time since there is no evidence of erosion of importance along this line of contact.

An important point to consider with respect to the Kaibab formation and the cliff dwellers in this canyon is the presence of softer members of sandy limestone interspersed in the section with the more resistant or massive limestone beds. This condition during the process of the carving of the canyon and the normal weathering processes gave rise to ragged, vertical cliffs, with recessed grooves in the walls which finally formed the homes of the pueblo Indians. The ledges may have been formed in part by the action of the stream on the softer beds when it was cutting away at much higher levels, but the process may be explained in most instances I believe, by the normal agencies of differential weathering.

STRUCTURE

Since the structural details would involve a rather lengthy report it may suffice to say briefly that they include upward movements at the close of the Permian and profound uplifting during the Tertiary. Generally speaking the uplifts have caused greater displacements of the rock strata than the faults, especially in the southern portion of the Colorado Plateau area. The exact time of the uplift which resulted in the canyon cycle of erosion to form the Grand Canyon, Walnut Canyon, and many other canyons in this region is still the subject of considerable difference of opinion.

As regards to Walnut Canyon in particular, during one of the later periods of uplift, the rock strata were broken forming what has been termed the Anderson Mesa fault. This fracture in the earth's surface represents a displacement of around 300 feet, strikes N 65° W, with the uplifted block on the northeast side. The fault no doubt partially dammed the stream but since the uplift was so slow the stream was able to maintain its channel and thereby with the additional gradient and power supplied the cutting tool gained sufficient force to carve Walnut Canyon. Dr. Colton has referred to these clefts as being actually sawed, with the body of the saw composed of the water, the teeth made up by the boulders, pebbles and sand grains, and the energy being supplied by gravity. Much the same factors were necessary in the cutting of the Grand Canyon of the Colorado River. Minor North-south faulting along Walnut creek has probably been responsible for some of the zig-zag courses which the stream followed. The stream followed these breaks or cross-faults as a line of least resistance in the softer broken rocks before returning to its normal course. As cut-offs

were formed and the old meanders abandoned the central "islands" were carved out.

SUMMARY

It is thought that the following points may prove of interest to the visitors without boring them with too much geological detail:

I. Walnut Canyon may be termed a Grand Canyon in miniature in which a broad regional uplift supplied the stream with the necessary power to carve the gorge.

II. The stream working through zones of weakness along minor north-south faults which cross the canyon, developed many meanders or goose necks, and when later these were carved through, cut-offs forming "islands" remained which the pueblos have utilized as fortresses.

III. Ledges in the Kaibab limestone were formed by the differential weathering of the hard and soft members. The massive resistant limestone beds for the ledge which served as the roof and floor and the weaker sandy limestones eroded more rapidly to form the recesses in which the cliff dwellings were constructed.

IV. The contact between the Kaibab and the Coconino seems a worth while feature to point out as well as the nature of the Coconino sandstone with typical characteristics of a wind blown dune deposit.

V. The marine fossils in the Kaibab limestone should prove of interest as they clearly demonstrate the uplift that has taken place in the general area. These beds are now some 7,000 feet above sea level.

INFORMATIONAL SIGNS

The following informational signs are recommended:

I: WALNUT CANYON
The Canyon was formed as the result of a gradual uplift of the region with the stream being able to maintain its course. The additional power supplied the stream enabled it to saw out the gorge that we now see.

II: KAIBAB LIMESTONE
A shallow water limestone deposited in the sea and containing many remains of marine fossils.

III: COCONINO SANDSTONE
A wind blown dune deposit containing footprints and trails of land animals.

IV: LEDGES AND GROOVES
The ledges make up the more massive and resistant members of the Kaibab limestone. The grooves or recesses consist of the weaker beds which contain more sand in the limestone and are more easily eroded. This is the result of normal differential weathering.

BIBLIOGRAPHY

1. Colton, H. S. and Baxter, Frank C., "Days in the Painted Desert and the San Francisco Mountains," Privately printed.

2. McKee, Edwin D., "The Coconino Sandstone - Its History and Origin," Carnegie Institution of Washington Publication No. 440, Pages 77 to 115, November 1933.

3. Robinson, H. H., The San Franciscan Volcanic Field, U. S. G. S. Professional Paper No. 76, 1913.

4. Colton, H. S., Walnut Canyon, Museum Notes of the Museum of Northern Arizona, Vol. 2, No. 3, 1929.



VISITOR RESEARCH

AT PUEBLO GRANDE

(Ed. Note: Following are questions asked by various groups at Pueblo Grande, Phoenix, Arizona. Mr. Odd Halseth, director, kindly gave permission to use them in the Supplement. We hope, as time gones on, to make thorough studies of visitor reaction which will aid in museum planning and improvement of guiding technique).

QUESTIONNAIRE BY HIGH SCHOOL STUDENTS

1. How long have Indians been here?
2. Where did they come from?
3. Who were the first Indians?
4. What weapons did they use?
5. How did they live or in what kind of houses?
6. What was the largest tribe?
7. Who was the cief of the tribe?
8. What was the god they worshipped?
9. Did any Indians ever live at foot of or in mountains to east of Phoenix? Superstition?
10. Did any Indians who worshipped the snake ever live around Phoenix?
11. Were different groups of Indians formed who worshipped same things by law of Issolation?
12. How can you tell the age of ruins? By the tree ring theory in the logs off the Puebloes?
13. Did the Indians practice irrigation any place else than the Sale and Gila River Valleys to a great extent?
14. What conception do most tribes have of the Deity, if any?
15. Which of the various theories concerning the origin of the Indians do you think most probable?
16. Are the Navajo Indians any kin to the Apaches?
17. Which group of Indians north of Mexico was the most highly civilized?
18. How long have the Indians been in North and South America?
19. Where did the Indians originate?
20. How many Indian cities have been discovered recently? What has been found in them?
21. Do Indians have a writing system?
22. Where did the Indians get their gold and jewels?
23. Did the Indians mine it or just find it?
24. How did they make their gods or images?
25. Who made them?
26. Did they all contribute gold for a temple?
27. Why did they have certain places for sacrifices?
28. How did they first learn about the gods?
29. Were there more than one race of Indians that lived in the Casa Grande Ruins at different times?
30. About what year, if there were two different races, were the first and last?

30. About what year, if there were two different races, were the first and last?
31. Are there any Indian legends relating to Fray Marcos de Niza? His trek thru Arizona?
32. Any legends relating to the inscription on the rock in the South Mountains?
33. Were the Aztec Indians up in this part of the country?
34. Is there any connection in race of the Ruins of Tuzigoot and those of the Pueblo Grande and Walpi?
35. Where were most of the burials found at Pueblo Grande?
36. Were the three Pueblos mentioned in #34 built at the same time?
37. Do Indians still believe in their ceremonial dances?
38. Did the Spanish consider themselves amply rewarded for exploring Latin America?
39. Who were the first Indians to come to Arizona and where did they come from?
40. What is the oldest ruin in Arizona?
41. How many different tribes of Indians are there in Arizona?
42. What is the oldest tribe of Indians in Arizona?
43. Which ruin is the most famous?
44. Why did some Indians have only one door in a pueblo and no objects upon which to sit?
45. Why do we never hear of Indian wigwams any more?
46. Why do Indians as a rule outlive white people?
47. Did they ever have any system of names as we do?
48. About how long would it take an Indian to make a good stone knife?
49. Why is it that Indians are not allowed to possess or drink intoxicating liquors?
50. In about how many years will the Indian race be extinct?
51. Can Indian writing really be read by white men of today?
52. How or where did the plan or idea of the pueblo buildings originate?
53. Did the Pueblos trade or have anything to do with the tribes in Mexico?
54. Why are the tribes of Indians so different? They are all Indians.
55. Were the Indians polygamists?
56. Were the women respected or thought of as slaves?
57. How does Indian culture as a whole compare with ours today?
58. Were the Indians in this part of the country as fond of beauty as those of Mexico and Pere?
59. How did their scientific achievements compare with those of other Indians?
60. Why are other Indians so different from those in Arizona and New Mexico?
61. Why did the Maya Indians move north?
62. Did the Pueblos use many domesticated animals?
63. What was the main or most common illness among Indians?
64. Of all the Indian tribes, which tribe is the most advanced?
65. In what part of the country do most Indians reside at this time?

66. Which tribe is considered the most brilliant and cultured at this time?
67. Are many Indians making rapid strides in modern times?
68. How did they make their weapons out of rocks without breaking?
69. Why did they live on the desert instead of in the mountains?
70. Do you think the Indians would go wild again if given the chance?
71. Where did the Pueblo Indians go and why?
72. How large were the Pueblos? Body structure; description.
73. What was their chief occupation?
74. When were they at the height of their civilization?
75. What form of government did they use?
76. How far were they advanced in mathematics, etc.?
77. What did the children do?
78. What was the size of the average family?
79. Who was the head of the house?
80. Was there such a thing as divorce?

Adults Questionnaire

1. What type Indian lived in the Amazon Valley?
2. Why is it that Indians living comparatively close together had such different religions?
3. What type of Indians lived in Patagonia?
4. What is conducive to the Indian's mastery of art?
5. What kind of dwellings typify the Indian's place of abode today?
6. Are the Indians content with what they have?
7. Is the mortality rate of the Indian increasing?

No Classification Given

1. How long did it take the Indians to build the Pueblos?
2. How many Indians now inhabit Arizona?
3. What group of Indians are independent?
4. What is the name of the material the Indians use to make baskets?
5. What group of Indians in Arizona seem to be the most intelligent?
6. Are there any records of the sign language used by the Southwestern Indians?
7. Did the Indians have any domesticated animals at all?
8. Did they drink any kind of strong drinks when they were holding their ceremonials.
9. When you tell of rich robes the Indians wore -- were they made of hides or cloth?
10. Did the Indians mummify their dead?
11. Did they make use of cactus?
12. If they did, is it known how they did it?
13. How many different tribes are in the Southwest?
14. Why were the Pueblos more talked about than the Mayas?
15. Were the Mayas great people of learning and understanding?
16. Would you please name some of the important Mayan cities?
17. Do you think Fray Marcos de Nizo's name is a fake or not?

18. In what years did the Mayas leave the cities?
19. Were the Mayas conquered by the Incas or other foreigners?
20. In what country did the first Indian originate and the date?
21. How many different tribes of Indians are there in the U.S.?
22. Did Columbus find Indians of wealth or not?
23. Explain marriage ceremonies among Arizona Indians?
24. Is there any effort being made to institute courses of study in public high schools on prehistoric people of our Southwest and their culture and their civilization?
25. Are you informed of the ruins and graves along Clear Creek northeast of Camp Verde and that these places are being destroyed by campers and fishermen without regard to their possible value and no thought of their desecration?
26. What is the relationship between the extant Indian and the present day?
27. Does Archeology reveal any relationship in design or building to resemble Egyptians?
28. Did the ancient culture move from a course northern or southern in direction?
29. What was the cause of their disappearance?
30. Are these prehistoric Indians of the same race as those found in old Mexico?
31. Why do the Indians partake of the unsanitary living conditions that prevail in their homes after having attended good schools where they learned differently.
32. What type of social organization did these Indians have?
33. What are the general characteristics of the Indians?
34. Do you know whether the Pueblo Indians were peaceful or warlike?
35. Do all the Indians dance for several nights before Easter?
36. What are some of the chants of Easter? Sacred?
37. Has any one collected the music of Arizona Indians? Where may some be found?
38. Why do the Indians stop living in one place after a member of the tribe dies?
39. Why have the Indians stopped making baskets as they used to?
40. Why do the Indians believe they will get rain by dancing three or four nights?
41. Why do the squaws do the work?
42. Was there any shade in Salt River Valley when the Indians inhabited this dwelling?
43. Did the Indians live in cities? If not, why not?
44. What is the religious belief of the Indians regarding a hereafter?
45. Do all tribes of Indians bury the personal belongings with the deceased?
46. How did the Indians happen to choose this spot to build on?
47. How advanced was the stage in which the Indians lived as can be bound from their ruins?
48. Who is paying for the maintenance of these ruins?

49. How do these Indian homes differ from the homes of the Apaches?
50. Are these tribes related in any way to the Mongolian race?
51. Did these Indians write any hierogliphics? If not, who wrote those in the South Mountains?
52. How the Indians irrigated? Were these Indians nomadic?
53. Who was the first to locate these ruins of Pueblo Grande?
54. Why have not people noticed or taken care of these ruins before?
55. I would like to know something of the people who lived on the present Chihuahwa-Sonora line. There are huge vase-like structures which investigation (personal) showed it was first built of wattles, then overlaid with clay. The firing was done from within. The marks of the wattling showed clearly inside. A few ears of corn were in these vases. The vases were large enough that a human being could go into them comfortably. Who were these people? Where have they gone? Also mile after mile of hills are terraced. The terraces follow the natural contour of the country. There are also caves in which are buried dead. The bottom of the caves are covered with bat guano. The bodies are in a sitting position, knees under chin, arms crossed over knees. The flesh was dry and they sounded like a drum when tapped upon.

****

RUMINATIONS

My ruminations are going to be rather short this month, Chief, because I have been a sort of fifth wheel on the wagon this trip. I missed my timing a little in going through a clinic, taking a day or two longer than we had planned and then they took a young door knob out of the small of my back which kept me down a couple of more days and here, when I do arrive on the scene, Luis meets me with: "Hurry up those Ruminations and don't make them too long because we are just holding open the rest of this page and are going to press right now with the index!" A city newspaper has nothing on these boys when it comes to the hectic rush of getting the stuff out on time!

Otherwise it would be a good time to ruminate, because here we are, at the close of another volume of Monthly Reports, where we can point with pride to and you can probably view with alarm, the five hundred pages of explanation and description of what we have been doing in our district this last six months.

Also it is the close of the old financial year and the opening of the new, and we are looking forward with some satisfaction to the additional protection and service we will be able to render under those new appropriations.

But we forego all these ruminations and step over from the old volume to the new and from fiscal year '36 to fiscal year '37 with the ever recurring hope that the major breaks will continue to fall our way.

Cordially, The Boss

INDEX, JANUARY — JUNE, 1936, INCLUSIVE

Aztec Ruins National Monument
Monthly reports:Jan., 27; Feb., 98; Mar.. 159; Apr., 270; May 348; June, 444.

Bacteria in Tumacacori Walls, article reprinted from Arizona Republic, 317.
Bandelier National Monument
Bird Notes, Jan., 74; Feb., 130.
1936 Bird Banding Total, 478.
ECW Reports: Jan.,35; Feb., 115; Mar., 147; May, 354.
Forestry reports: Jan., 31; Feb., 114; Mar., 148; Apr., 282; May, 356; June, 463.
Monthly Reports: Jan., 6; Feb., 111; Mar., 145; Apr., 278; May, 352; June, 460.
Visitor Reasearch at, 403.
Beaubien, Paul
Bird Banding at Walnut Canyon in 1936, 479.
Saguaro reports: Jan., 18; Feb., 87; Mar., 156; April, 259
Walnut Canyon reports: May, 347; June, 440.
Bird Banding
Fiscal Year 1936 Report for Southwestern Monuments, 468
Monthly Totals: Jan., 40-2; Feb., 128; Mar., 237; Apr., 320; May, 410.
Notes, by J.E. Fast, 125.
Bird Notes:
Bandelier: Jan., 74; Feb., 130; Apr., 322.
El Morro: June, 448.
Montezuma Castle: June, 442,
Borell, Adrey
Proposed Rodent Control at Chaco, 180
Reports: 122-5; 285.
Botany
Keet Zeel Canyon Vegetation, by K.C. Karbchuer, 318.
Parker's Wild Palms, reprint from Arizona Republic, 408
Boundey, George L.
Gran Quivira reports: Feb., 89; Mar., 169; Apr., 247; May, 332; June, 437.
Tumacacori reports: Jan., 19.
Brewer, James W., jr.
An Interesting Room at Wupatki, 401
Date Seeds at Wupatki, 131
Notes on How to Build a Hogan, 485
Sunset Crater reports: Jan., 24; Feb., 103; Apr., 256; May, 346; June, 427.
Wupatki reports: Jan.,20; Feb.,100; Mar., 161; Apr., 252; May, 342; June, 421.
Budlong, Betty
Navajo Study Project, 123
Budlong, Robert R.
Canyon de Chelly reports: Jan., 12; Feb., 88; Mar., 165; Apr., 250; May, 346; June, 451.
Butler, Ruth E.
Texas Missions, 480.

Canyon de Chelly National Monument
Monthly Reports: Jan., 12; Feb., 88; Mar., 165; Apr. 250; May, 346; June, 451.
Navajo Study Project at, 123.
Capulin Mountain National Monument
Geology report on, 122-8
Monthly reports: Jan., 31; Feb., 116; Mar., 164; May, 358; Apr., 263; June, 453.
Casa Grande National Monument
Bird Banding at, by J.E. Fast, 125.
Bird Banding report for 1936, 372.
Excavation of Northeast Building of Compound A, by Frank Pinkley, 233.
Excavation of "Throne Room" of Clan House, by Frank Pinkley, 235.
Monthly Reports: Jan., 16; Feb., 108; Mar., 170; Apr., 272; May, 341; June, 433.
Ranger Guide Service atm by Dale S. King, 60.
Visitor Appreciation, 227

Casa Grande National Monument (cont)
Visitor Research at, 310
Wildlife reports: 122-6; 286.
Caywood, Louis R.
Bird Banding at Tumacacori in 1936, 477.
Junior Naturalist Reports: Jan., 39; Feb., 121; Mar., 179; Apr., 284.
Proposed Museum Exhibits Plan for Montezuma Castle, 195.
Reports: Walnut Canyon, Jan., 11; Feb., 106;
Tumacacori: Mar., 166; Apr., 260 May, 331; June, 434.
Caywood, L.R., and Fast, J.E.
Life Figures on Hohokam Pottery, 187
Ceramics
Life Figures on Hohokam Pottery, by John E. Fast and L.R. Caywood 187.
Chaco Canyon National Monument
Proposed Rodent Control at, 180
Monthly reports: Jan. 25; Feb., 93; Mar., 151; Apr., 267; May, 350; June, 431.
Charles, Tom
White Sands Reports: Jan., 14; Feb., 91; Mar., 167; Apr., 248; May, 338; June, 427.
Chase, H.B.
Bandelier ECW reports: Jan., 35; Feb., 115; Mar., 147; May, 354.
Chiricahua National Monument
ECW Reports: Jan., 30; Feb., 89; Mar., 149; Apr., 262; May, 338; June, 430.
Geology report, 29.
Monthly reports: Jan., 30; Feb., 89; Mar., 149; Apr., 262; May, 338; June, 429.
Wildlife report: 285.
Closing, by the Boss
Jan., 40-6; Mar., 185; Apr., 287; May, 370; June, 467-3
Contacts, Educational
Travel Year 1935, 75.
40-4; 121; 185; 363; 467.

Date Seeds in Wupatki Midden, by James W. Brewer, jr., 131
Dendrochronology
How to Tell about Tree Rings, by Earl Jackson, 55.
Diehl, Jack
Engineering reports: Feb., 122-7; Mar. 179; May, 366.

ECW Reports:
Bandelier: Jan., 35; Feb., 115; Mar., 147; May, 354.
Chiricahua: Jan., 30; Feb., 89; Mar., 149; Apr., 262; May, 338.
Pipe Spring: Jan., 34; Feb., 104; Mar., 157; Apr., 264; May, 335.
Education, Branch of
Contacts Summaries 40-4; 121; 185; 363; 75.
Monthly reports: Jan., 35; Feb., 117; Mar., 176; Apr. 282; May, 358; June, 462.
Engineering, Branch of
Reports: Jan., 40-6; Feb., 122-7; Mar., 179; May, 366.
El Morro National Monument
Monthly reports: Jan., 5; Feb., 98; Mar., 172; Apr., 276; May, 370; June, 446.
Erskine, J. Donald
Casa Grande report for June, 433
Pipe Spring report for March, 157
Walnut Canyon reports: Feb., 107; Mar., 155; Apr., 257.
Evenstad, Martin
Feb. Tumacacori report, 95.
Excavations at Northeast Building of Compound A at Casa Grande, by Frank Pinkley, 233.

Faris, Johnwill
Aztec Ruins reports: Jan., 27; Feb., 98; Mar., 159; Apr., 270; May, 348; June, 444.
Farr, Homer J.,
Capulin Mountain reports: Jan., 31; Feb., 116; Mar., 164; Apr., 263; May, 358; June, 453.
Fast, John E.,
Bird Banding Notes at Casa Grande, 125

Fast, J.E., and Caywood, L.R.,
Life Forms on Hohokam Pottery, 187
Fish, Frank,
February Montezuma Castle, 96.
Forestry
Bandelier Monthly reports: Jam., 31; Feb., 114; Mar., 148; Apr., 282; May, 356; June, 462.
Fulton, James,
Forestry reports: Jan., 31; Feb., 114; Mar., 148; Apr., 282; May, 356; June, 462.

Geology
Capulin Mountain report, 122-8
Chiricahua Report, 29
Sunset Crater Report, 291
Walnut Canyon Report, 492
White Sands Report, 381
Gibson, Fred,
Notes on Peyote, 54, 237.
Gran Quivira National Monument
Monthly reports: Jan., 10; Feb., 89; Mar., 169; Apr., 247; May, 332; June, 437.
Tabira's Water Supply, 225.
Great American Family, by Earl Jackson, 228.

Hagan, O.T.,
Notes on Tabira's Water Supply, 225.
Hamilton, J.B.
Engineering report: May, 367.
Heaton, Leonard,
Bird Banding during 1936 at Pipe Spring, 479.
Interview with Alonzo Winsor, 301
Notes on EarlyHistory of Pipe Spring, 299.
Pipe Spring monthly reports: Jan. 33; Feb., 104; Mar., 157; Apr., 264; May, 334; June, 438.
Hendron, Jerome,
Bandelier reports: May, 352; June, 460.
Historical
Notes on Early History of Pipe Spring, by L. Heaton, 299, 301.
Tabira's Water Supply, 225
Hogan, Notes on How to Build, by James Brewer, jr., 485.
Hovenweep National Monument
Reports: Mar, 152; June, 455.

Interesting Room at Wupatki, by James W. Brewer, jr., 401.

Jackson, Betty
Bandelier Bird Notes: Jan., 74; Feb., 130; Apr., 322.
Bird Banding at Bandelier during 1936, 478.
Jackson, Earl,
Great American Family, 228.
How to Tell about Tree Rings, 55.
Monthly Reports: Jan., 6; Feb., 111; Mar., 145; April, 278; May, 356.
Jackson, Martin,
Montezuma Castle reports: Jan., 32; Mar., 153; Apr., 269; June, 440.
Johnson, Zeke,
Natural Bridges reports: Jan., 34; Feb., 116; Mar., 175; May, 369.
Radio Talk, "Scenic Southern Utah", 222.

Karbchuer, K.C.,
Keet Zeel Canyon Vegetation, 318.
Keet Zeel Canyon Vegetation, by K.C. Karbchuer, 318.
Keur, Drs. John and Dorothy,
Visitor Impressions in Southwestern Monuments, 57.
King, Dale S.,
Bird Banding in Southwestern Monuments in 1936, 468
Bird Banding at Casa Grande in 1936, 372.
Comments on Ranger Guide Service at Casa Grande, 60.
Monthly reports: Jan. 38; Feb., 120; Mar., 178; Apr., 282, 283; May, 362; June, 464.

Life Figures on Hohokam Pottery, by John E. Fast and L.R. Caywood, 187

Miller, T.C.
Chaco Canyon reports: Jan., 25; Feb., 93; Mar., 151; Apr., 267;

May, 350; June, 431.
Yucca House--Hovenweep report: March, 152.
Missions, Texas, by Ruth E. Butler, 480
Montezuma Castle National Monument
Proposed Museum plan for, 195
Monthly reports: Jan., 32; Feb., 96; Mar., 153; Apr., 269; May, 356; June, 440.
Museums
Proposed Museum Exhibit Plan for Montezuma Castle, 195.

Natural Bridges National Monument
Monthly Reports: Jan., 34; Feb. 116, Mar., 175; May, 369; June, 455.
Navajo Arts and Crafts Exhibit at Wupatki, 488, 423.
Navajo National Monument
Bird Banding during 1936 at,478
Keet Zeel Canyon Vegetation, by K.C. Karbchuer, 318.
Monthly reports: Mar., 277; Apr., 336; June, 453, 454.
Navajo Study Project at Canyon de Chelly, by Betty Budlong, 123.
Nusbaum, Deric,
Hovenweep June report, 455

Palms, Parker's Wild, reprinted from Arizona Republic, 408
Peyote, Notes on, by Fred Gibson, 54, 237.
Pinkley, Frank,
Closing; Jan., 40-6; Mar., 186; Apr., 287; May, 370; June,467-3
Excavation of Northeast Building of Compound A at Casa Grande, 233.
Excavation of Throne Room at Clan House at Casa Grande, 235
Ruminations: Jan., 78;;March, 240 April, 322; May, 412; June,503.
Sevemteen Years Ago, 133.
Pinkley, Frank, and Tovrea, J.H.,
Tumacacori Choir Loft Problem,375
Pipe Spring National Monument
Bird Banding at, 479.
Historical notes, 299, 301.
Monthly Reports: Jan., 33; Feb., 104; Mar., 157; Apr., 264; May, 334; June, 438.
Proposed Museum Exhibits Plan for Montezuma Castle National Monument, by L.R. Caywood, 195.
Pueblo Grande
Visitor research at, 314; 499.

Rainbow Bridge National Monument
Monthly Report: June, 437.
Reconnaissance of Tonto, by Victor R. Stoner, 304.
Rose, Robert R.,
Contact Statistics, 75; 121; 185; 363; 465.
Monthly report: Jan., 35; Feb., 117; Mar., 176; May, 358; June, 462.
Ruminations, by the Boss
Jan. 78; Mar., 240; Apr., 322; May, 412; June, 503.

Saguaro National Monument
Monthly reports: Jan., 18; Feb., 87; Mar., 156; Apr., 259.
Wildlife reports: 122-5; 286.
Scenic Southern Utah, radio talk by Zeke Johnson, 222.
Seventeen Years Ago, reprint of old reports by Frank Pinkley; Feb., 1919, 133; Mar., 1919, 134; Apr., 1919, 13
Smith, Norman,
Chiricahua geology report, 29.
Smith, W.H.,
Gran Quivira reports: Jan.,10; Feb., 89; Mar., 169.
Spires, Woodrow,
Tonto monthly reports: Jan., 24; Feb., 109; Mar., 150; Apr., 275; May, 333; June, 445.
Visitor Questions at Tonto, 407.
Steen, Charlie,
Jr. Naturalist Reports: May, 363; June, 464.
Walnut Canyon report for May, 153.
Stevenson, Wm.
Chiricahua reports: Jan., 30; Feb., 89; Mar., 149; Apr., 262; May, 338; June, 429.
Chiricahua ECW reports: Jan., 30; Feb., 89; Mar., 149; Apr., 262; May, 338; June, 430.

Stoner, Victor R.,
Reconnaissance of Tonto, 304
Sunset Crater National Monument
Geological report, by Vincent W. Vandiver, 291
Monthly reports: Jan., 24; Feb., 103; Apr., 256; May, 346; June, 427.

Tabira's Water Supply, historical notes by O.T. Hagen, 225
Texas Missions, by Ruth E. Butler
Tonto National Monument
Monthly Reports: Jan., 24; Feb., 109; Mar., 150; Apr., 275; May, 333; June, 445.
Reconnaissance of, by V.R. Stoner, 304.
Tovrea, J.H.
Notes on Architecture of Tumacacori, 41.
Report: 40-6.
Tovrea, J.H., and Pinkley, Frank,
Tumacacori Choir Loft Problem, 375
Tumacacori National Monument
Architecture, by J.H. Tovrea, 41
Bacteria in Walls, reprint from Arizona Republic, 317.
Bird Banding during 1936, 477.
Choir Loft Problem, by J.H. Tovrea and Frank Pinkley, 375.
Monthly Reports: Jan., 19; Feb., 96; Mar., 166; Apr., 260; May, 325; June, 415.
Wildlife report: 122-6.
Travel to Southwestern Monuments
Jan., 1; Feb., 81; Mar., 139; Apr., 243; May, 325; June, 415.

Vandiver, Vincent W.,
Sunset Crater Geological Report, 291.
White Sands Geological Report, 381.
Walnut Canyon Geological Report, 492.
Visitor Impressions
By Drs. John and Dorthy Keur, 56
By Mr. and Mrs. Shattuck, 227.
Visitor Research
at Bandelier, 403
at Casa Grande, 310
at Pueblo Grande, 314, 499.
at Tonto, 407
Comments on Ranger Guide Service at Casa Grande, by Dale S. King, 60.
Vogt, Evon Z., jr.,
Monthly reports: Jan., 5; Feb., 98; Mar., 172; Apr., 276; June, 446.
Vogt, Evon Z., sr.,
El Morro reports: Mar., 172; May, 373.

Walnut Canyon National Monument
Geological report: 492.
Monthly reports: Jan., 11; Feb., 106; Mar., 153; Apr., 257; May, 347; June, 440.
Wegemann, Carrol,
Capulin Mountain geological report, 122-8
Wetherill, John
Navajo reports: Apr., 336; June, 454.
Wetherill, Milton,
Bird Banding during 1936 at Navajo, 478
Montly reports: Mar., 277; Apr., 337; June, 453.
White Sands National Monument
Geological report: 381
Montly reports: Jan., 14; Feb., 91; Mar., 167; Apr., 248; May, 338; June, 427.
Wildlife report: 285.
Wildlife Division
Montjly reports: 122-5; 285.
Rodent Control at Chaco, 180.
Wilson, Wm., and Katherine
Rainbow Bridge report for June, 437.
Winsor, Alonzo,
intervied concerning Pipe Spring, 301
Winter, W.J.,
Casa Grande reports: Jan., 16; Feb., 108; Mar., 170; Apr., 272; May, 341.
Visitor Research at Casa Grande, 310.
Woolcott, Alexander, at Wupatki, reprint from Coconino Sun, 136.
Wupatki National Monument

Wupatki National Monument
An Interesting Room at, by J.W. Brewer, jr., 401.
Date Seeds in Midden, 131.
Monthly reports: Jan., 20; Feb., 100; Mar., 161; Apr., 252; May, 342; June, 421.
Navajo Arts and Crafts Exhibit, 488.
Palms, Parker's Wild, reprint from Arizona Republic, 408.
Woollcott, Alexander at, 136.

Yucca House National Monument
March report, by Carrol Miller, 152.

Archeological Conf